

THE BRITISH JOURNAL OF CHILDREN'S DISEASES.

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CONTENTS

	PAGE
The Effect of Special High Protein Diets in the Treatment of Chronic Intestinal Indigestion in Children. By ALAN BROWN, M.B., ANGELIA M. COURTNEY, B.A., and IDA F. MACLACHLAN, B.A.	113
The Severe Blood Diseases of Childhood: A Series of Observations from the Hospital for Sick Children, Great Ormond Street. Part II.—Leukæmia. By F. JOHN POYNTON, M.D., F.R.C.P.Lond., HUGH THURSFIELD, M.D.Oxon., F.R.C.P.Lond., and DONALD PATERSON, M.B.Edin., M.R.C.P.Lond.	128
Royal Society of Medicine	144
Société de Pédiatrie, Paris	152
Abstracts from Current Literature	154
Reviews	162

SHL
WITHDRAWN

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TABLE OF CONTENTS

ORIGINAL ARTICLES.

PAGE

1. The Effect of Special High Protein Diets in the Treatment of Chronic Intestinal Indigestion in Children. By ALAN BROWN, M.B., ANGELIA M. COURTNEY, B.A., AND IDA F. MACLACHLAN, B.A.	113
2. The Severe Blood Diseases of Childhood: A Series of Observations from the Hospital for Sick Children, Great Ormond Street. Part II.—Leukæmia. By F. JOHN POYNTON, M.D., F.R.C.P.Lond., HUGH THURSFIELD, M.D.Oxon., F.R.C.P.Lond., AND DONALD PATERSON, M.B.Edin., M.R.C.P.Lond.	128
ROYAL SOCIETY OF MEDICINE	144
SOCIÉTÉ DE PÉDIATRIE, PARIS	152

ABSTRACTS FROM CURRENT LITERATURE.

Surgery. —Some aspects of the abdominal emergencies of childhood.—Acute intussusception in children.—Chronic intussusception.—Mobile ascending colon and duodenal obstruction as common causes of equivocal symptoms in the abdomen.—Notes on an unusual case of intestinal obstruction.—Rupture of the bowel by compressed air.—Recent advances in orthopedic surgery.—The diagnosis of early hip-joint disease in children.—Legg's or Perthes' diseases.—Perthes' disease.—Pseudo-coxalgia.—Treatment of neglected cases of club foot.—Congenital dislocation of the head of the radius.—Ischæmic contracture of forearm.—Arthroplasty of the knee-joint.—Sclerosing non-suppurative osteomyelitis.—Osteomyelitis of the upper jaw in infants.—Two cases of mediastinal abscess from dorsal Pott's disease.—Wound of the thoracic duct in the removal of tuberculous cervical glands.—Osteopsathyrosis idiopathica.—Meningitis with putrid cerebro-spinal fluid following slight trauma to the back and operation for adenoids and large tonsils.—Thrombo-phlebitis of the cavernous sinus of dental origin	154
---	-----

REVIEWS.

Management of the Sick Infant.—Alimentation et Hygiène des Enfants.—Diagnostik der Kinderkrankheiten mit besonderer Berücksichtigung des Säuglings.—Tuberculosis in Infancy and Childhood.—Lehrbuch der Grenzgebiete der Medizin und Zahnheilkunde.—Rôle de la Radiologie dans le Pronostic des Affections Cardio-Vasculaires.—Le Dispensaire Marin.—L'Année Thérapeutique.—Transactions of the American Pediatric Society, vol. xxxii.—Transactions of the American Pediatric Society, vol. xxxiii	162
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Original Articles.

THE EFFECT OF SPECIAL HIGH PROTEIN DIETS IN THE
TREATMENT OF CHRONIC INTESTINAL INDIGESTION IN
CHILDREN.*

By ALAN BROWN, M.B., ANGELIA M. COURTNEY, B.A., and IDA F.
MACLACHLAN, B.A.,
Toronto.

CHRONIC intestinal indigestion, the cœliac disease first described by Gee (1), Gibbons (2), and Cheadle (3), or Herter's intestinal infantilism (4), is characterised by impaired bodily development and an abnormal digestive condition. The stools are large, often light-coloured and very foul, at times diarrhoeal, and there is usually marked abdominal distension. It is to be distinguished from the chronic indigestion due to pancreatic insufficiency, for in intestinal infantilism no benefit is derived from feeding pancreatic extract (5) (6).

As an excellent review of the history of this disease has been made recently by R. Miller (7), reference to the literature will be made here only for the purpose of illustration and comparison.

Herter gave the name "intestinal infantilism" to this condition because he considered it to be associated with the presence of an abnormal intestinal flora, in which there was a preponderance of the acidophilic, Gram-positive organisms characteristic of the nursling period, particularly *B. bifidus* and an organism which Herter called *B. infantilis*. With this

* From the Nutritional Research Laboratories of the Hospital for Sick Children and the Department of Pediatrics, University of Toronto. Read by invitation before the Buffalo, N.Y., Academy of Medicine, April, 1922.

preponderance was found almost an exclusion of the *B. coli* and *Lactis aerogenes* groups. Herter thought there was an impaired absorption due to a chronic inflamed condition of the intestinal tract brought about by this abnormal flora. He found indicanuria and other evidences of intestinal putrefaction. There has not been general acceptance of this theory of a characteristic abnormal flora and consequent enteritis in intestinal infantilism, and some investigators even claim that Herter's findings have not been confirmed (8). Freeman's cases, however, in which the stool examinations were made by Herter, gave positive results (9). More extended bacteriological studies are necessary before Herter's theory can be either accepted or discarded.

Whatever may be found to be the cause of the condition, there is a general agreement that the retention of fat and of certain of the mineral salts, notably calcium and phosphorus, is much below normal if there is not actually a negative balance of the two last mentioned, and that not infrequently there is but small retention of the other salts and of nitrogen.

This opinion is based partly upon clinical observations of the amount and nature of the feces considered with the commonly inadequate food intake, and partly upon a considerable number of quantitative determinations.

The normally small retention or even loss from the body of fat, salts and nitrogen can thus be accounted for by the large excretion in the feces. There have been too few quantitative studies made on the urine of children suffering from intestinal infantilism to determine whether or not there is regularly any abnormality in the urinary excretion which could affect unfavourably the retention. In the small number of cases in which the determinations have been made there has been found the low urinary excretion of calcium characteristic of infant metabolism.

The small retention of fat, nitrogen and salts to be expected with the large stools typical of this disease is made worse by a common method of treatment—that of cutting the food intake, especially of fat, to a minimum. The disadvantage of such procedure when not necessitated by diarrhoea or vomiting is well brought out in some tables by Holt, Courtney and Fales, on fat retention by children suffering from chronic intestinal indigestion (10). A study of these tables shows that the average loss of fat by the ten children taking over 35 gm. of fat a day was between 8 and 9 gm., and that of those taking less than 35 gm. was between 7 and 8 gm. With the larger intake this gave an average retention of over 38 gm. a day, while with the smaller intake the retention averaged only about 18 gm. a day.

The metabolism findings by Holt (11) on E. R— and by McCrudden

Fat
Calcium
Phosphorus

(12) on F. S— both show the important part played by the increased intake in the improving of the retention.

In general it is essential to give to children suffering from chronic intestinal indigestion a diet capable of supplying sufficient calories as well as all the elements needed for growth—adequate protein, salts, and the accessory food factors. In looking for such a food, at once one is met with difficulties. That carbohydrate must be discarded to the greatest possible extent all clinical experience confirms. The marked increase in fermentation so commonly observed with increase of carbohydrate in the diet is sufficient evidence of intolerance. Herter's view of an abnormal acidophil flora lends support to the removal of carbohydrate from the food. Fat also is usually greatly cut down or practically excluded because of the characteristic large loss of fat in the stools. Holt's (10) average on twenty-one determinations was between 7 and 8 gm. daily in comparison with his average for normal children on mixed diet of about $2\frac{1}{2}$ gm. daily. Moreover, when there is an acid condition in the intestines, fat is as a rule borne well only by breast-fed infants. Because of the evidences of putrefaction—the odour of the stools, indicanuria, and the presence of putrefactive products in both urine and stools as found by Herter (4)—some have considered that the intake of protein also must be greatly reduced. By these, gelatin has been largely used as a partial substitute for protein and for the energy-supplying foods as providing calories and some of the necessary amino-acids, and at the same time not containing the chief forerunners of the putrefactive products. 11x!

There are several reasons for adopting the special high protein diet used by us in chronic intestinal indigestion apart from the intolerance for carbohydrate and for fat exhibited in this disease. Fermentation processes are evidently abnormally active. Protein is efficient in curbing these by replacing the medium in which fermentation is active by one unfavourable to it, and by changing the reaction of the intestinal contents from acid to alkaline. If the presence of an acid-loving flora is the cause of the condition, a high protein diet is thus the rational one. At the same time, by providing a considerable part of the food in the form of protein milk or lactic acid milk, there is introduced into the intestinal tract a large quantity of an organism opposed to the infantile type described by Herter.

This special high protein diet, including lactic milk or protein milk as an important component, by providing a medium unfavourable to fermentation and at the same time introducing large quantities of an organism antagonistic to the infantile type, satisfies either condition considered essential for establishing a change in the intestinal flora.

According to the more widely accepted theory, first propounded by Escherich, and recently set forth in an article by Sherman and Lohnes (13), the change of medium is of the first importance. According to Ford, Blackfan and Bachelor (14), however, a change in intestinal flora can more often be attributed to the introduction of an opposing organism than is generally supposed to be the case.

Moreover, in a diet containing protein milk or lactic acid milk supplemented by curds of milk, a food is provided which is the richest possible in calcium and phosphate—the salt elements most needed in view of the backward development of the children with intestinal infantilism. With such a food as this, the fat can be increased fairly rapidly once alkaline conditions are established in the intestines. On the other hand, carbohydrate cannot be used to any extent until a cure is well under way, and then only with the greatest caution.

ANALYSIS OF CASES.

As the title of this paper indicates, we have not restricted ourselves exclusively to a discussion of true or severe intestinal indigestion for the reason that we wished to include cases of a milder type presenting symptoms resembling those of the severer grade. It is just within the limits of possibility that these so-called mild types, if untreated, might develop the more severe grade of indigestion, with its consequent much restricted growth. The general management of both types, however, is more or less on similar lines.

We have divided our cases into three groups, viz. (1) mild, (2) moderately severe, and (3) severe, this last group representing the classical type of chronic intestinal indigestion or infantilism. A detailed study is here limited to this series. In the first group there were four cases, ranging in age from two to five years. The chief symptoms in this group consisted of looseness of the bowels with definite evidence of fermentation, general lack of tone and fatigue with restless sleep. The cases in this group were only slightly under weight. On examination there was a mild degree of secondary anæmia, but usually no definite distension. In the previous histories of this group there was a record of excessive feeding with bread-stuffs and sweets; the symptoms had existed for a period of from four months to about one year before coming under observation. The response to the moderate high protein diet with lactic acid milk took place in about six to nine months' time.

In the second group there were six cases, ranging in age from eighteen months to five years. The chief points of difference between this and the first group of this series lay in the fact that all the symptoms of

carbohydrate indigestion were exaggerated, that there was pronounced evidence of under-nutrition with distension, that all in this series required a more rigid exclusion of carbohydrate from their dietary regimen, and that recovery took anywhere from six months to one year longer. At times it was extremely difficult to differentiate this group from the extreme type of infantilism.

In the third group, which represented the extreme type, there were nine cases, six of whom have been followed to complete recovery. Of the remaining three cases one is in the process of recovery; the parents of one became discouraged just at the period when the diet *regime* was being widened and sought other advice; and the last one was in an extreme condition, five years old, weight 15 lb., and the parents refused treatment. All the cases in this group presented the classical picture of varying degrees of emaciation with greatly distended abdomen, lack of growth, physical and mental fatigue and a moderate degree of anæmia. The previous histories of these patients were fairly regular, consisting of repeated digestive upsets usually associated with diarrhœa and continuously a high carbohydrate diet. It should be noted that acholic stools were not always observed in our series; we do not consider this type of stool typical of the condition.

The general plan of treatment in this series has been fairly uniform throughout. Until the stools show no evidence of fermentation and have lost their acid reaction the patients are held strictly to the exclusive protein diet (A); the changes are then gradually made according to the tolerance of the patients. The length of time on each diet will naturally vary with the patient and his ability to tolerate more food. In general, however, the average length of time the patients (seven patients) were kept on the high protein diets, A to D, was about eighteen months to two years. This does not include one (Burbidge) who, with exceptions, was held fairly well to the high protein diet for about six years. Following the strict protein diets, carbohydrate foods as indicated in the diets are gradually added one at a time, and the child in this manner cautiously brought up to a full diet. It not infrequently happened that the first added carbohydrate had to be eliminated and the strictly protein diet resorted to again.

DIET FOR MILD TYPE.

Breakfast:

- Rice, oatmeal, farina, cream of wheat, cornmeal, hominy (all cooked 4 hours),
1 to 3 rounded tablespoons.
- 1 to 3 pieces of lean bacon or 1 to 3 tablespoons of beef, chop or chicken.
- 1 to 2 pieces of zwieback (unsweetened).
- 6 to 8 ounces of 2 per cent. lactic acid milk or plain boiled 2 per cent. skim milk.

118 HIGH PROTEIN DIETS IN INTESTINAL INDIGESTION.

Dinner :

1 to 4 rounded tablespoons of scraped steak, chop or chicken, soft boiled, poached, or scrambled egg.

1 to 2 tablespoons of peas, spinach, lima beans, lentils, carrots (all put through a sieve).

Custard, cornstarch or junket, occasionally (if constipated and it is tolerated) 1 to 2 tablespoons of apple sauce or pulp of prunes.

1 to 2 pieces of zwieback (unsweetened).

Tea :

Same as breakfast, in addition add custard, cornstarch or junket if hungry.

DIET FOR MODERATELY SEVERE TYPE.

Breakfast :

Rice, oatmeal, farina or cream of wheat (cooked 4 hours), 1 to 3 rounded teaspoons.

3 pieces of lean bacon or 1 to 3 tablespoons of beef, chop or chicken.

1 zwieback (unsweetened).

6 to 8 oz. of protein milk or 2 per cent. lactic acid milk.

Dinner :

1 to 4 rounded tablespoons of scraped steak, chop or chicken, occasionally a soft-boiled egg.

2 cups of junket with the whey removed,

or 1 cup of custard, or cornstarch.

1 zwieback (unsweetened).

6 ounces of protein milk or 2 per cent. lactic acid milk.

Tea :

Same as breakfast without the meat; occasionally cream cheese or plain gelatin pudding.

N.B.—Many patients are allowed as much junket curds as they will take.

DIET FOR SEVERE TYPE.

Diet A :

Protein milk 8 to 10 oz. every 4 hours for 5 feedings. This initial or corrective diet may last for weeks, depending upon the rapidity with which all signs of carbohydrate indigestion disappear.

Diet B :

6 a.m.—8 oz. protein milk.

10 a.m.—1 to 3 rounded tablespoons of curds, 8 to 10 oz. protein milk.

2 p.m.—Same as 10 a.m.

6 p.m.—Same as 10 a.m.

10 p.m.—6 to 8 oz. protein milk.

The duration of this diet may be from 10 days to several weeks, depending on the tolerance of the child. Patients not only make a pronounced qualitative gain, but actually increase in weight a very appreciable amount in spite of the low carbohydrate content.

Diet C :

6 a.m.—8 oz. protein milk.

10 a.m.—1 to 4 rounded tablespoons of curds, 8 to 10 oz. protein milk.

2 p.m.—1 increasing to 4 rounded tablespoons scraped steak or chicken, 1 to 4 table-spoons curds.

6 p.m.—Same as 10 a.m.

10 p.m.—6 to 8 oz. protein milk.

Diet D :

Breakfast.—4 to 5 tablespoons bacon or chicken.

3 to 4 tablespoons curds, 8 to 10 oz. protein milk.

Dinner.—4 to 5 tablespoons chicken, chop or beef, 4 tablespoons curds.

1 to 4 tablespoons cream cheese or 1 oz. gelatin.

8 to 10 oz. protein milk.

Tea.—4 tablespoons chicken, 4 tablespoons curds.

10 oz. protein milk.

The above-mentioned diets are referred to in the text as high protein. To diet "D" carbohydrates are gradually added in the following order, replacing one or more of the protein foods : Rice, 1 tablespoon, increasing to 3 tablespoons ; farina or cream of wheat ; peas ; spinach ; carrots ; $\frac{1}{2}$, increasing to 1 zwieback.

In this manner one gradually works up to the diet as outlined for the mild type, and finally to the normal child's diet. During the entire course of high protein feeding, cod-liver oil in mxx doses three times a day, gradually increasing to dr. j three times a day, is given continuously.

It should be remembered that the high protein diet is very constipating, and consequently a laxative will have to be administered fairly regularly. Compound rhubarb powder or aromatic cascara we have found to be most useful in this respect. They should be given in divided doses three times a day in order to be effective.

The approximate distribution of calories as fat, carbohydrate and protein in these special diets is shown in Table I.

TABLE I.—*Approximate Distribution of Calories in Special High Protein Diets.*

DIET A.				
<i>Severe Type.</i>				
	Fat.	Carbohydrate.	Protein.	Total calories.
Calories	226 to 364	108 to 135	172 to 215	506 to 714
Per cent. of total calories	44·7 to 51·0	21·3 to 18·9	34·0 to 30·1	—
DIET B.				
Calories	315 to 638	110 to 147	200 to 309	625 to 1094
Per cent. of total calories	50·4 to 58·3	17·6 to 13·4	32·0 to 28·3	—
DIET C.				
Calories	295 to 755	90 to 131	192 to 409	577 to 1295
Per cent. of total calories	51·1 to 58·3	15·6 to 10·1	33·3 to 31·6	—
DIET D.				
Calories	840 to 1169	113 to 131	620 to 748	1573 to 2048
Per cent. of total calories	53·4 to 57·1	7·2 to 6·4	39·4 to 36·5	—
<i>Moderately Severe Type.</i>				
Calories	393 to 748	304 to 443	218 to 427	915 to 1618
Per cent. of total calories	43·0 to 46·2	33·2 to 27·4	23·8 to 26·4	—
<i>Mild Type.</i>				
Calories	588 to 873	443 to 781	284 to 497	1315 to 2151
Per cent. of total calories	44·7 to 40·6	33·7 to 36·3	21·6 to 23·1	—

The approximate distribution of calories as fat, carbohydrate and protein in the diets of the cases studied chemically is given in Table II.

TABLE II.—*Approximate Distribution of Calories in Diets of Cases Studied.*

DIET OF J. B.—: FIRST PERIOD.						
<i>Weight 34 lb.</i>						
	Fat.	Carbo- hydrate.	Protein.	Total calories.	Calories per lb.	Calories per kilo.
Calories	398	135	478	1011	30	66
Per cent. of total calories	39.4	13.3	47.3	—	—	—
DIET OF J. B.—: SECOND PERIOD.						
<i>Weight 50 lb.</i>						
Calories	703	366	463	1532	31	67
Per cent. of total calories	45.9	23.9	30.2	—	—	—
DIET OF H. B.—.						
<i>Weight 23 lb.</i>						
Calories	459	356	314	1129	49	108
Per cent. of total calories	40.7	31.5	27.8	—	—	—
DIET OF B. F.—: BEFORE TREATMENT.						
<i>Weight 22 lb.</i>						
Calories	235	382	224	841	38	84
Per cent. of total calories	28.0	45.4	26.6	—	—	—

The computation of the calories of the standard diets, as well as those of the children on whom metabolism observations were made, was based mainly on data obtained from Lock's 'Food Values' (15).

The extremely high percentage of calories as protein in the diet in J. B.—'s first period is to be noted. In the second period, when he had made a considerable clinical improvement, the proportion of protein was less, and that of both fat and carbohydrate appreciably more.

H. B.— was making steady improvement on his diet, in which the carbohydrate was a little higher and the fat a little lower than in J. B.—'s later diet.

B. F.—'s before treatment diet shows the low proportion of fat calories usual in the diets chosen for patients with this disease. The percentage of the total calories as protein is not low, though the actual number of calories as protein is not large. On the other hand, though the percentage of the total calories as carbohydrate is large, the actual number of calories is not great.

WEIGHTS.

The average weight at the beginning of the treatment of seven patients (severe type) was 20 lb., and at the end of treatment, *i. e.* when carbohydrates were being added, was 35 lb. The average

Name.	Age when first consulted.	Duration of symptoms.	Period of H.P. diet.	Weight at beginning of treatment.	Period of stationary weight or little gain.	Weight at end of treatment.	Comments.
Francis	2 years	1 year	9 months	15½ lb. lost to 14 lb.	5 months	26¼ lb.	Poor co-operation from parents; frequent upsets due to dietary errors.
Jewett.	14 months	3 to 4 months	2 years	18½ lb. lost to 15 lb.	7 months	28 lb.	November, 1921, weight 49 lb., height 44 in.; 5 years. Normal weight 39 lb., height 40 in.; 5 years.
Burbidge	2½ years	1 year	6 years	20 lb., height 29½ in.; at 5 years 26 lb., at 7 years 29 lb., at 8½ years 34 lb., and height 38½ in.; at 9 years 48 lb., height 47 in.	2 years	48 lb.	March, 1922, weight 52 lb., height 45 in.; 9 years. Normal weight 45 lb., height 45 in.; 7 years.
Banks	5½ years	4 years	1 year	26 lb.	9 months	38 lb.	January, 1922, weight 57 lb., height 48½ in.; 12 years. Normal weight 55 lb., height 48 in.; 9 years.
Baker	1½ years	4 months	3 years	16 lb.	2 years	42 lb.	September, 1921, weight 44 lb., height 41 in.; 5 years. Normal weight 39 lb., height 40 in.; 5 years.
Blackwell	5½ years	2 to 3 years	2 years	24 lb., height 36 in.	8 months	35 lb.	November, 1921, weight 38 lb., height 40½ in.; 7 years. Normal weight 45 lb., height 44 in.; 5 years.
Douglas	2 years	4 months	1½ to 2 years	21 lb.	1 year	31 lb.	For final results am indebted to Dr. Langley Porter, of San Francisco, who kindly co-operated with me in this case.

period of stationary weight was approximately one year; the shortest period of stationary weight was five months, and the longest period two years. When once these patients commenced to gain in weight the increase was fairly consistent, being broken only by occasional upsets. Qualitative gain was usually the first clinical evidence of improvement, signified by a reduction in distension, improvement in vigour, tissue turgor and disposition. It was, indeed, most gratifying to see these patients gain so consistently on a strictly protein diet, this being quite contrary to the usual opinion.

Of five cases in this series two were above the normal in weight and height at the end of treatment, while the remaining three were from two to three years below the normal in height; at their present rapid gain in height, however, it should only be a matter of another two years before they would be normal. Presumably, then, none in this series would end as dwarfs. Indeed, it may reasonably be expected that at least one or two of these children would be above normal at or about puberty. Another striking feature of all of this series has been their comparative freedom from parenteral infections. True it is, they were specially guarded against intercurrent infections, but they were nevertheless exposed, and it appeared at least from the clinical standpoint that their resistance was somewhat better than that of the average child.

CHEMICAL FINDINGS.

In three cases of chronic intestinal indigestion the quantitative analysis of food, fæces and urine for fat, nitrogen and various salts was made. Two of the children had been under treatment for some time with the special high protein diet, and the other was a mild case with whom treatment had not been begun. One of the children under treatment was doing so well at the time of the observation that only one study was made. With the other, a considerably older child, progress was slower, and a second study was made after a two years' interval.

Table V gives the composition of the fæces in these four cases. Tables III and IV give for comparison the values found in the literature for

TABLE III.—*Per Cent. of Fat in Stools in Chronic Intestinal Indigestion.*
(From various investigators.)

Cheadle, W. B. ('Lancet,' 1903, i, p. 1497) .	63·35	19·8	24·3	44·9	49·65	33·0
Still, G. F. ('Lancet,' 1918, ii, pp. 163, 193)	26·9	73·1	42·5	—	—	—
Cautley, E. ('Arch. of Pediatrics,' 1921, xxxviii, p. 163)	44·4	—	—	—	—	—
Miller, R. ('Lancet,' 1920, ii, p. 1166) .	39·6	—	—	—	—	—
Miller, Webster and Perkins ('Lancet,' 1920, ii, p. 894)	57·14	52·4	24 to 28	—	—	—

TABLE IV.—*Composition of Fæces in Chronic Intestinal Indigestion and in One Normal Case. (From various investigators.)*

Reference.	Total solids, gram.	Fat, gram.	Fat per cent. of total solids.	Nitrogen, gram.	CaO, gram.	CaO per cent. of total solids.	P ₂ O ₅ , gram.	P ₂ O ₅ , per cent. of total solids.
Holt, L. E. <i>et al.</i> ('Amer. Journ. Dis. Child.,' 1917, xiv, p. 222)	18.53	11.22	60.5	.755	.704	3.8	.722	3.9
Do.	31.50	14.64	46.5	1.409	1.099	3.5	.745	2.4
Herter, C. A. (Monograph, 1908)	—	9.73	—	.780	—	—	—	—
Do.	—	8.03	—	1.098	—	—	—	—
"	—	5.56	—	.844	.959	—	1.070	—
McCrudden " and Fales (‘Journ. Exp. Med.,’ 1912, xv, p. 450; 1913, xvii, pp. 24, 202)	38.5	5.70	14.8	2.253	1.710	4.4	1.223	3.2
Do.	47.3	—	—	2.732	.946	2.0	.605	1.3
"	19.6	3.06	16.0	.901	1.464	7.5	—	—
<i>Normal Case.</i>								
"	20.4	4.74	23.2	1.081	1.699	8.3	.732	3.6

 TABLE V.—*Composition of Fæces in Chronic Intestinal Indigestion.*

	Total solids, gram.	Fat, gram.	Fat per cent. of solids.	Nitrogen, gram.	Nitrogen per cent. of solids.	Total salts, gram.	Total salts per cent. of solids.	CaO, gram.	CaO per cent. of solids.	MgO, gram.
Treated case:										
J. B—, 1920 .	20.8	6.743	32.4	.852	4.1	5.872	28.2	2.550	12.3	.248
J. B—, 1922 .	22.35	7.502	30.6	.995	4.5	5.752	25.7	2.378	10.6	.246
Treated case:										
H. B— .	11.25	2.471	22.0	.522	4.6	4.329	38.5	1.818	16.2	.186
Untreated case, mild: B. F—	17.76	4.818	27.1	.877	4.9	3.854	21.7	1.542	8.7	.175
	MgO per cent. of solids.	P ₂ O ₅ , gram.	P ₂ O ₅ per cent. of solids.	Cl, gram.	Cl per cent. of solids.	K ₂ O, gram.	K ₂ O per cent. of solids.	Na ₂ O, gram.	Na ₂ O per cent. of solids.	
Treated case:										
J. B—, 1920 .	1.2	1.575	7.6	.045	.2	.462	2.2	.113	.5	
J. B—, 1922 .	1.1	2.012	9.0	.064	.3	.557	2.5	.106	.5	
Treated case:										
H. B— .	1.7	1.530	13.6	.018	.2	.270	2.4	.020	.2	
Untreated case, mild: B. F—	1.0	1.673	9.4	.028	.2	.369	2.1	.019	.1	

 TABLE VI.—*Composition of Fæces in Mild Case of Chronic Intestinal Indigestion, Untreated, and in One Normal Case.*

	Total solids, gram.	Fat, gram.	Fat per cent. of total solids.	Nitrogen, gram.	CaO, gram.	CaO per cent. of total solids.	P ₂ O ₅ , gram.	P ₂ O ₅ , per cent. of total solids.
Abnormal:								
B. F— .	17.76	4.82	27.1	.877	1.542	8.7	1.673	9.4
Normal:								
E. M— .	12.23	3.42	28.0	.540	1.172	9.6	.890	7.3

the more significant constituents in this disease—fat, nitrogen, calcium and phosphates. In Table VI are shown corresponding values found by us for a child normal as to digestion compared with those for our untreated case of chronic intestinal indigestion.

It must be kept in mind in studying Table V that J. B— was a child eight years of age at the time of the first observation, though weighing only 34 lb., while H. B— and B. F— were only three years of age when the observation was made, and weighed respectively 23 and 22 lb.

In Table III is seen the high percentage of fat in the stools in chronic intestinal indigestion as reported by different observers. Holt reports an average of 18 per cent. for a large number of normal children taking a mixed diet.

In Table IV are seen the large actual as well as percentage losses in the fæces found in this disease. McCrudden's normal case included in this table showed no essential difference in stool composition from his abnormal ones, but the normal happened to be a much larger child, taking much more food.

Table V shows for our cases the typical large losses in the fæces of fat, nitrogen and the important salts. There is seen no striking change in the composition of fæces of J. B— in the second period from that in the first. The fat and carbohydrate in the diet had been increased, and the intake of potassium and of phosphates was distinctly higher in the second period. In the findings for H. B— it is seen that, though the intake of fat and all the salts except sodium and chlorine was closely comparable to that of J. B— in his first period, yet H. B—'s fæces show much smaller losses of fat, calcium, magnesium and potassium than those of J. B—. The significance of this fact is appreciated when it is considered that H. B—, following the period of observation, made phenomenally rapid progress clinically, while J. B— gained at a much slower rate. The contrast between the findings for H. B— and those of B. F—, the untreated case, is quite marked. B. F—, who had in most respects a much smaller intake, lost in the fæces much more fat and nitrogen and almost as much calcium and magnesium as H. B. This abnormal loss in the fæces of B. F— is brought out more strikingly in Table VI, where it is contrasted with the loss in the fæces of a child normal as to digestion. This child was about twelve years of age and was taking a large quantity of food, about 100 grm. of fat, and more than twice as much of nitrogen and nearly twice as much of the various salts as B. F—, yet the loss in the fæces was distinctly less in every respect.

Table VIII gives the intake and the excretion in the urine found in the four studies made by us. Table VII gives the corresponding values for nitrogen, calcium and phosphates as found by other observers, while

Table IX gives them for our untreated case contrasted with those for the normal child.

TABLE VII.—*Urinary Excretion of Nitrogen, Calcium and Phosphates in Chronic Intestinal Indigestion and in One Normal Case. (From various investigators.)*

Reference.	Nitrogen intake, gram.	Nitrogen in urine, gram.	CaO intake, gram.	CaO in urine, gram.	P ₂ O ₅ intake, gram.	P ₂ O ₅ in urine, gram.
Holt <i>et al.</i>	5.84	4.22	.505	.018	1.305	.715
"	8.57	5.34	1.328	.017	2.631	1.395
Herter	6.65	5.64	.982	.012	2.029	1.050
McCrudden and Fales :						
F. S—	5.94	2.685	1.058	.018	1.985	.452
F. S—	11.05	5.485	1.685	.020	3.155	1.403
F. H—	8.13	5.573	1.470	.026	—	—
Normal Case.						
McCrudden and Fales :						
W. M—	14.35	10.83	2.498	.371	4.118	2.352

TABLE VIII.—*Excretion in Urine in Chronic Intestinal Indigestion.*

	Nitrogen intake, gram.	Nitrogen in urine, gram.	Total salts intake, gram.	Total salts in urine, gram.	CaO intake, gram.	CaO in urine, gram.	MgO intake, gram.	MgO in urine, gram.
Treated case:								
J. B—, 1920	18.644	16.312	19.733	13.358	2.990	.094	.443	.091
J. B—, 1922	18.051	15.771	21.047	14.664	2.764	.043	.435	.145
Treated case:								
H. B—	12.233	8.318	12.151	5.246	2.456	.149	.387	.069
Untreated case, mild: B. F—	6.528	5.586	11.468	6.161	1.585	.008	.271	.043
	P ₂ O ₅ intake, gram.	P ₂ O ₅ in urine, gram.	Cl intake, gram.	Cl in urine, gram.	K ₂ O intake, gram.	K ₂ O in urine, gram.	Na ₂ O intake, gram.	Na ₂ O in urine, gram.
Treated case:								
J. B—, 1920	4.519	1.867	5.020	4.909	2.644	2.154	4.764	4.297
J. B—, 1922	5.230	2.419	4.993	5.132	4.383	3.023	4.677	4.364
Treated case:								
H. B—	5.263	1.544	1.635	1.221	2.545	1.661	1.919	.850
Untreated case, mild: B. F—	3.082	.883	1.955	1.210	2.702	1.750	1.373	1.461

TABLE IX.—*Urinary Excretion of Nitrogen, Calcium and Phosphates in Mild Case of Chronic Intestinal Indigestion and in One Normal Case.*

	Nitrogen intake, gram.	Nitrogen in urine, gram.	CaO intake, gram.	CaO in urine, gram.	P ₂ O ₅ intake, gram.	P ₂ O ₅ in urine, gram.
Abnormal: B. F—	6.528	5.586	1.585	.008	3.082	.883
Normal: E. M—	16.414	12.979	2.728	.580	5.250	2.494

The only peculiarity shown in Table VII is the low calcium content of the urine, in all these cases of chronic intestinal indigestion. In Table VIII J. B—'s findings show no significant difference in the second period

from those in the first period. What differences there are in the urinary excretion, except in the case of magnesium, can be associated with changes in intake. The failure to show any essential change in the urinary excretion after the interval agrees with what was found in regard to the fæces of this child. Except for calcium, to which reference will be made again, H. B— shows a much smaller excretion in the urine in proportion to the intake than does J. B—. B. F— excreted more nitrogen and sodium and chlorine proportionately to the intake than did either H. B— or the normal child, E. M— (Table IX).

The really interesting point brought out in the tables on the urinary excretion is that the extremely low calcium content of the urine typical of chronic intestinal indigestion, as shown in Table VII, is found in our untreated case, while J. B—, who was only gradually outgrowing the condition, had a somewhat greater excretion than any of the abnormal cases, and H. B—, who was making more rapid recovery, had still more calcium in the urine. Both normal children, McCrudden's and ours, show a much greater calcium content of the urine than any of the abnormal. That this small excretion of calcium in the urine in chronic intestinal indigestion is not immediately dependent upon the small absorption of calcium from the intestinal tract typical in the disease is shown in the two periods of F. S— reported by McCrudden. In the first period there was no absorption, the loss in the fæces being greater than the intake, while in the second period there was an absorption of .74 grm. of calcium oxide. Yet there was practically the same low calcium content of the urine in both periods.

In Table X is shown for the four periods studied the actual retention of fat, nitrogen, and salts, and the percentage of the intake retained.

TABLE X.—*Retention in Chronic Intestinal Indigestion.*

	Fat, grm.	Fat per cent. of intake.	Nitrogen, grm.	Nitrogen per cent. of intake.	Total salts, grm.	Total salts per cent. of intake.	CaO, grm.	CaO per cent. of intake.	MgO, grm.
Treated case:									
J. B—, 1920 .	36.04	84.3	1.480	7.9	.503	2.5	.346	11.6	.104
J. B—, 1922 .	68.1	90.1	1.285	7.1	.631	3.0	.343	12.4	.044
Treated case:									
H. B— .	46.93	95.0	3.393	27.7	2.576	21.2	.489	19.9	.132
Untreated case, mild: B. F—	13.66	73.9	.066	1.0	1.453	12.7	.035	2.2	.053
	MgO per cent. of intake.	P ₂ O ₅ grm.	P ₂ O ₅ per cent. of intake.	Cl, grm.	Cl per cent. of intake.	K ₂ O, grm.	K ₂ O per cent. of intake.	Na ₂ O, grm.	Na ₂ O per cent. of intake.
Treated case:									
J. B—, 1920 .	23.5	1.077	23.9	.066	1.3	.028	1.1	.354	7.4
J. B—, 1922 .	10.1	.799	15.3	0	0	.803	18.3	.207	4.4
Treated case:									
H. B— .	34.1	2.189	41.6	.396	24.2	.614	24.1	1.049	54.7
Untreated case, mild: B. F—	19.4	.526	17.0	.717	36.7	.583	21.6	0	0

J. B—'s retention in the second period was not essentially changed from that in the first, except that the actual retention and the percentages of fat and of potassium were considerably increased—both constituents in which the intake was markedly greater. The phosphate retention did not increase with a higher intake. H. B—'s retention—both actually and as percentage of the intake, was large. The untreated child, B. F—, made a very poor retention of the important constituents, fat, nitrogen and calcium, and a really good retention of potassium and chlorine only.

SUMMARY.

The outstanding feature of this condition accepted generally is fat intolerance. It is well understood that no fat intolerance can be overcome in the presence of excessive fermentation such as exists in all cases of chronic intestinal indigestion. With the view of improving the fat absorption a diet that will reduce to a minimum the process of fermentation has been selected, which in its most radical form consists of protein or lactic acid milk, curds, meat, cheese and gelatin. This procedure has been employed in seven cases with a satisfying recovery in all. In three of these the normal height has not yet been reached, but with their present rapid rate of growth we anticipate this will soon be attained. A strikingly rapid qualitative improvement, as shown by reduction in distension, improvement in vigour and increase of tissue turgor characterised all these cases.

Metabolism findings were obtained in three children. One untreated (B. F—) showed with a small intake large losses in the stools and poor retention of the important constituents, viz. fat, nitrogen and calcium. The second child (J. B—), who on a high protein diet with a larger intake was in the process of recovering, showed also large losses in the stools, but a generally better retention than the untreated case. In his second observation, two years later, he showed very little improvement in chemical findings, except that with a greater fat and potassium intake he had an increased retention.

The third child (H. B—), who at the time of observation was at the beginning of a very rapid improvement, showed on this high protein diet with a good intake small losses in his stools and an extraordinarily good retention of everything.

REFERENCES.

- (1) GEE, S.—'St. Bart.'s Hosp. Rep.,' 1888, xxiv, p. 17.
- (2) GIBBONS, R. A.—'Edin. Med. Journ.,' 1889, xxxv, pp. 321, 420.
- (3) CHEADLE, W. B.—'Lancet,' 1903, i, p. 1497.
- (4) HERTER, C. A.—'On Infantilism from Chronic [Intestinal Obstruction,' McMillan Co., New York, 1908.

- (5) BRAMWELL, B.—‘*Edin. Med. Journ.*,’ 1915, i, p. 323.
- (6) MILLER, R., WEBSTER, J., AND PERKINS, H.—‘*Lancet*,’ 1920, ii, p. 894.
- (7) MILLER, R.—BRITISH JOURNAL OF CHILDREN’S DISEASES, 1921, xviii, p. 11.
- (8) CAUTLEY, E.—*Ibid.*, 1919, xvi, p. 101; ‘*Arch. Pediat.*,’ 1921, xxxviii, p. 163.
- (9) FREEMAN, R. G.—‘*Amer. Journ. Dis. Child.*,’ 1911, ii, p. 332.
- (10) HOLT, L. E., COURTNEY, A. M., AND FALES, H. L.—*Ibid.*, 1919, xviii, p. 107.
- (11) *Idem.*—*Ibid.*, 1917, xiv, p. 222.
- (12) MCCRUDDEN, F. S., AND FALES, H. L.—‘*Journ. Exp. Med.*,’ 1913, xvii, pp. 24, 202.
- (13) SHERMAN, DE W. H., AND LOHNES, H. R.—‘*Arch. Pediat.*,’ 1922, xxxix, p. 37.
- (14) FORD, W. W., BLACKFAN, K. D., AND BACHELOR, M. D.—‘*Amer. Journ. Dis. Child.*,’ 1917, xiv, p. 354.
- (15) LOCKE, E. H.—‘*Food Values*,’ D. Appleton & Co., New York and London, 1920.

THE SEVERE BLOOD DISEASES OF CHILDHOOD: A SERIES
OF OBSERVATIONS FROM THE HOSPITAL FOR SICK
CHILDREN, GREAT ORMOND STREET.

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PART II.—LEUKÆMIA.

Introductory remarks.—The leukæmic group, as our series of cases clearly illustrates, once more brings us to some of the most difficult problems in the study and classification of blood diseases. Any sharp clinical distinction between myeloid and lymphocytic leukæmia in childhood becomes impossible, and, further, there are unusual examples in which the resemblance to cases in the group of anæmia gravis (aplastic anæmia) and purpura hæmorrhagica is clinically very close.

One point we lay particular emphasis upon is the dissimilarity of the picture of our cases of lymphocytic leukæmia to that which many may have gathered from descriptions in the text-books.

The most severe of them have shown little or no lymphatic enlargement, and the spleen may not be felt, or at the most be detected just below the costal arch.

We are naturally led to ask ourselves what position the lymphatic structures take in this disease. Are they a primary factor sharing this

with the marrow or are they only involved as a secondary event, and the bone-marrow entirely responsible for the disorder?

The pathological examinations of our cases inclines us, on the whole, to the view that the changes in the lymphoid tissues are the result of the primary damage to the bone-marrow, but the decision on this point is a very difficult one.

Another difficult point arises in the differential white cell count. What percentage of lymphocytes, it might be asked, is a test of lymphatic leukæmia? For example, the relative proportion of lymphocytes may also be high in anæmia gravis (aplastic anæmia). In one case of this kind the relative proportions of lymphocytes in the three counts were 62 per cent., 70 per cent. and 32 per cent., and in one of the leukæmic cases it was only 69 per cent. In both diseases we have the evidences of grave anæmia and great illness. Our experience on this point was that the *relative proportion* of lymphocytes tended to fall in anæmia gravis as the illness progressed, but in lymphatic leukæmia it tended to rise, reaching 90 per cent. or over, but this was not invariable. We are, it must be understood, not dealing here with the total number of lymphocytes, but with their relative proportion to other cells in the white group.

It is natural to speculate whether, if we had seen these cases of lymphatic leukæmia earlier in the illnesses, some or all of them would have shown an even lower proportion of lymphocytes than 69 per cent.

At the risk of becoming too elementary in our comments, we would point out here that a great increase in the *total* number of white cells in lymphatic leukæmia in our series *was the exception*. One case showed 123,000 per c.mm., but the majority gave a low count.

This in our experience has proved a great stumbling-block to students who are endeavouring to master the chief facts of the grave anæmias, for we find they associate lymphatic leukæmia with a high count of white cells—for example, 40,000 per c.mm. or over. Yet it is essential to realise that not only may the total count not be increased, but may be much diminished. In other words, lymphatic leukæmia of the most severe kind may be associated with a leucopenia.

Two examples from the series will serve to illustrate this point.

CASE 1.—Boy, aged $7\frac{2}{3}$ years. Gave a white cell count of 100,000 per c.mm., and of these cells 99 per cent. were lymphocytes.

CASE 2.—Boy, aged $7\frac{1}{2}$ years. Gave a white cell count of 3200. The lymphocytes were 85 per cent.

Both these cases died in hospital, and showed in their organs the characteristic lymphocytic infiltrations.

It is to these cases, of which the second example is a type—that is, cases with a leucopenia—that the term leukanæmia, or aleukæmic leukæmia,

has been given, and the essential point in such cases is that *of the small total count of white blood cells, the vast majority are lymphocytes.*

We found that this type was much the more frequent in this series, for, of the total number of twelve cases of acute lymphatic leukæmia, eight fell under this description.

A very brief analysis of the cases of leukæmia will show the variations in the characters of the white cell counts, and assist in making clear the phases of this most mysterious disease.

Four cases were examples of acute lymphatic leukæmia, with relatively high white cell counts. Eight were examples of leukanæmia, that is, acute lymphatic leukæmia with low white cell counts. Two cases were examples of acute myeloid leukæmia with numerous myelocytes in the counts. Three were cases resembling lymphatic leukæmia in the high proportion of lymphocytes, but also akin to the myeloid form in the presence of melocytes—a group which may be termed mixed leukæmia.

It is noteworthy that several cases of lymphatic leukanæmia showed on the first examination of the blood an average number of white cells.

Case 2, for example, had in the first count 17,500 white cells per c.mm., but the number fell eventually to 3200 per c.mm.

On the other hand, those cases in the leukæmic series with a high total count died with this high count still present, and when we attempted to distinguish the leukæmic and leukanæmic cases by clinical symptoms other than the blood pictures, we failed to discover any means of differentiation. Both groups were virulent, and showed fever, hæmorrhage and extreme illness. When, again, we studied the morbid anatomy, we found that cases with a low white cell count showed apparently in some examples as much leukæmic infiltration in the organs as those with a high count.

It is then apparent that neither the total white cell count nor the relative proportion of lymphocytes solves the problem of the diagnosis of leukæmia, and we have to seek further assistance in the nature of the lymphocytic cell. The lymphocytic cell in leukæmia may be an abnormal cell unlike the ordinary lymphocyte, and the presence of such abnormalities as increase of size and vacuolation of the protoplasm, which are apparent on microscopic examination, may afford another means of clinching the diagnosis. This important factor in diagnosis unfortunately becomes one of much difficulty when, as in leukanæmia, the number of these aberrant cells are few.

If the microscopic distinctions between the normal lymphocyte and the aberrant one was always distinct and conclusive, it would be an easy matter to distinguish leukæmia from anæmia gravis and purpura hæmorrhagica. We should then put any doubtful case into the leukæmic group by discovering in the blood film the aberrant lymphocyte. If

this cell was present in considerable numbers, the case would be one of lymphocytic leukæmia; if in scanty numbers, one of lymphocytic leukanæmia. In our experience, however, cases occur in which the microscopic distinctions are so slight and so indefinite that we have been left in doubt, and have been obliged to study also the total number of white cells and the relative lymphocyte count.

When we turn to the prognosis of lymphatic leukæmia, there is a point which is worth comment. All the cases were fatal, and the great majority progressed rapidly to the fatal end. Now and again, however, a sudden inexplicable change for the better may occur and the improvement be maintained for a short time; and not only this—more than one such rally may be recorded in the same patient. For example, a boy of 4 years was admitted to hospital in October, 1919, with a history of two months' illness. His blood-state was leukanæmic in type. Five days later he appeared to be dying, and, being an only child, his parents took him home. There he improved remarkably, and maintained the improvement until January, 1920, and then, getting worse, was again admitted on February the 6th. Once more the illness rapidly progressed, and once more he was taken home on February the 28th to die. He, however, survived until April the 4th. Anyone unaware of this possibility of temporary improvement may be led on the one hand to give a prognosis without guarding himself against this ally, and his accuracy in diagnosis be questioned. On the other hand, he may be misled by this improvement in the patient and encourage an unwarranted optimism. A complete blood-count, and in particular the differential blood-count, will show, even during the stage of the rally, a leukæmic character in the white cell count, both total and differential. If these are present, and if, too, the lymphocytic cell is abnormal, there is unfortunately no room for optimism. The fact that such an event as a temporary recovery from a condition of desperate illness can occur is clearly a clinical fact of the greatest interest in the history of leukæmia.

In conclusion, we would once more dwell upon the essential result of this analysis, that there is in children a very important group of cases of acute lymphatic leukæmia, which, from the time they come first under observation, do not show a high white cell count, but, on the contrary, a low one. They, moreover, invariably show a high relative proportion of lymphocytes which may be abnormal in appearance.

A GENERAL ANALYSIS OF THE CASES OF LEUKÆMIA.

In this group there were eighteen cases; fourteen of these were diagnosed as acute lymphatic leukæmia, two as myeloid leukæmia, and two were apparently of a mixed type.

Acute lymphocytic leukæmia.—French writers for clinical purposes have endeavoured to classify the acute lymphatic cases into various groups, such as (1) the bucco-pharyngeal, (2) the hæmorrhagic, (3) the anæmic, (4) the thoracic. Such has its clinical value, but though in our series certain symptoms have been predominant in individual cases, we found that there were so many symptoms in common that there appeared no advantage to be gained by such a classification. In four cases buccal symptoms were the salient ones—in five hæmorrhages and in four anæmia—but pains in the bones and abdomen, a swinging temperature and purpura were also met with repeatedly.

Ætiology.—The causation of leukæmia is no more evident in our series than in those reported by other writers. In eight cases there was no clue, the illnesses developing so gradually that their duration was uncertain. In other cases there was some evidence in favour of an infective process. Five gave histories of pleurisy, pneumonia or bronchitis, from which time the children were believed to have failed in health.

In two cases "diphtheria" was the antecedent, and in one a "cold" three weeks before admission. In another case there was an alveolar abscess. We accordingly arrive at the same position as others who have pointed out the occurrence of acute infections preceding a certain proportion of these cases and the mysterious origin of others.

If we make any comment, it would be that we incline on our evidence to the belief that the solution of the problem of leukæmia lies rather in some peculiar reaction to infection than in the existence of some specific infective agent.

It is well known that in suppurative infections there is a polymorphonuclear leucocyte reaction, and also that in some conditions such as whooping-cough, diphtheria, mumps and tuberculosis there may be a mononuclear reaction. Possibly, then, there may be circumstances dependent upon the individual as upon some peculiarity in an infective process which caused a lymphatic or myeloid reaction, and it may be that there are poisons which are not necessarily of infective origin, which produce the same result.

Age and sex.—The age varied from $1\frac{1}{4}$ years to 12 years. The incidence in the male was striking, ten of the fourteen cases being males.

Duration and symptoms.—The average duration before admission to hospital was two months, the shortest three weeks, the longest eight months.

In sharp contrast was the short duration of the illness after admission, pointing clearly to the fact that before the parents were thoroughly alarmed the last phase of the disease had been reached.

Among the leading symptoms were the following: (1) Pallor. This

was constant, and was described in some cases as waxy ; in others as icteric, or even yellow. In one case the face was puffy and there was some general œdema, leading to the child being treated for "dropsy." (2) Lassitude and weakness were frequent. (3) In at least five cases pains in the bones and abdomen were present, and in some instances had led to the diagnosis of rheumatism. These symptoms were, however, entirely lacking in other cases. (4) Breathlessness and palpitation: these symptoms were entirely associated with the anæmia. (5) Fever. (6) In four cases bleeding had occurred before admission, and in others this appeared in hospital. In the worst cases this symptom developed as a continual oozing. Bleeding from the gums, purpura and ecchymosis, epistaxis and melæna were recorded. Retinal hæmorrhages were found in two cases. (7) Wasting was not a prominent symptom, but occurred in some of the cases associated with vomiting. (8) A septic condition of the mouth, and a diphtheroid membrane on the tonsils, with foul breath and ulceration of the gums, were prominent symptoms in four cases, reaching in two to the development of cancrum oris. (9) In four cases a large abdomen attracted attention. (10) The heart was rapid in action and there was usually a basal systolic murmur. In some instances, when the anæmia was very profound, the abrupt first sound could be mistaken for evidence of mitral stenosis, and occasionally a diastolic murmur appeared over the pulmonary cartilage. These physical signs are of practical importance in the diagnosis of acute lymphatic leukæmia from virulent rheumatism or malignant endocarditis. (11) In these cases the spleen was as a rule enlarged, but not invariably. It must be emphasised that in some instances—and these may be rapidly fatal cases—the spleen can hardly be felt just below the costal margin, or may never be felt at all. In other cases it extends some distance below the ribs, but in no instance did it reach very large dimensions. One was recorded after death as weighing 12 oz. In four cases it was never felt during life. (12) The liver also showed variation in size. In three cases it was not enlarged, in two it reached the umbilicus, and in the remainder it was easily felt. In all cases the enlargement was smooth and not tender. (13) The lymphatic glands were as a rule not enlarged. In one case the cervical glands were definitely increased in size, and the necropsy in one case showed a general enlargement of the internal glands moderate in degree, and great enlargement of the retroperitoneal glands in another. This absence of enlargement in the series is an interesting clinical fact, and, in the light of the usual teaching upon lymphatic leukæmia, an unexpected one.

The kidneys, though sometimes found enlarged at necropsy, gave no clinical assistance in the cases under our care.

Blood.—Reviewing the clinical picture, apart from the blood examination, we are struck by the negative features in lymphatic leukæmia. In most cases we were led to suspect grave illness from the extreme anæmia, purpura, fever, and slight but definite splenic enlargement, this symptom in some being associated with a septic condition of the tonsils and buccal cavity.

It is not to be wondered at that mistakes in diagnosis should be made, such, for example, as rheumatism and heart disease, malignant endocarditis, scurvy and simple anæmia.

Although the morphology of the blood would appear to have reached the limit of its usefulness in throwing light on the nature and treatment of leukæmia, there is no doubt that in diagnosis it has the greatest value to the clinician. In these fourteen cases of lymphatic leukæmia we find that in twelve cases there was in the differential white count a percentage of lymphocytes exceeding 80 per cent. In nine of these it reached 90 per cent. and over, the highest limit being 99 per cent., which occurred in two cases.

Thus by the time these children came to hospital the relative proportion of the white cells had altered in all but two cases so extremely as to make the diagnosis at once apparent. But, as we have stated above, many of the children came to the hospital in the terminal stages of this illness, and it remains a matter of speculation what information would have been gleaned from a blood examination at the onset of these symptoms.

The red cells also showed wide differences in the total count in the different cases, varying between such limits as 4,196,000 to 610,000 per c.mm. There was clear evidence that the prognosis became increasingly grave as the red cell count in any individual case diminished.

The total count of the white cells varied between 123,000 per c.mm. and 1800.

There is evidence in our series that this leukanæmia may be a final stage in the illness.

Examples of Lymphocytic Leukæmia.

CASE 1: *Characteristic lymphatic leukemia with high count.*—Boy, aged 7 $\frac{2}{12}$ years, was admitted on August the 15th, 1921, for a swollen stomach and enlarged cervical glands. He was one of four children, the others being healthy. Except for measles, chickenpox and a doubtful attack of whooping-cough at three years of age he had enjoyed good health.

In November, 1920, he was noticed to be pale, and later the cervical glands enlarged. In February, 1921, removal of the tonsils and adenoids produced no improvement. The pallor increased, and in March there was œdema of the extremities, in May epistaxis, and again in July a severe attack of nose-bleeding.

He was a pale child with a small hæmorrhage on the nose. The heart was rapid, with

a basal systolic murmur. The liver reached to the umbilicus and the spleen to the same level. The cervical axillary and inguinal glands were enlarged.

The blood examination showed: Red blood cells, 3,200,000 per c.mm.; white blood cells, 100,000 per c.mm.; hæmoglobin, 30 per cent.; lymphocytes, 99 per cent.; colour index, 0.5.

The temperature was raised and swinging, and the course rapidly downhill. Retinal hæmorrhages were present. Death occurred on September the 5th, 1921.

Necropsy.—Enlarged cervical and bronchial glands.

The liver weighed 3 lb., was pale and negative to the Prussian blue reaction.

The spleen weighed 7 oz., and was soft and of the characteristic pink and white appearance.

The bone-marrow showed the same changes in colour and consistence.

The kidneys were large and showed subserous hæmorrhages, and also hæmorrhages into the kidney substance.

There were numerous subserous petechiæ in the lungs and heart. The lymphoid tissue of the intestines was enlarged, as also the mesenteric glands.

Microscopy showed lymphocytic infiltrations in the liver, kidneys, spleen and cervical glands.

Characteristic Case of Leukanæmic Type.

CASE 2.—Boy, aged $7\frac{5}{8}$ years. Was admitted to hospital under Dr. Poynton on August the 9th, 1920, for swelling of the face, a septic mouth, and purpura of seven days' duration.

There was no unusual point in the family or personal history. In July he was operated upon and his tonsils removed. Hæmorrhage followed, for which he was detained in the country hospital for five weeks. The next point in the history was the development of toothache, attributed to disease of first molar on the right side. This was removed four days before admission, and was at once followed by swelling of the right cheek.

On admission he was pale and very ill. There was much swelling of the right cheek, which was covered with slough on the inner side, and the tongue was very coated and breath foul. All over the body there were petechiæ. The heart was rapid and hæmic murmurs were audible. Neither spleen nor liver could be felt. The temperature was high and swinging. The first blood-count showed: Red blood cells, 2,550,000 per c.mm.; white blood cells, 2400; hæmoglobin, 40 per cent.; polymorphonuclears, 10 per cent.; colour index, 0.8; lymphocytes, 90 per cent.

The fragility of the red cells was normal. The action of the serum on the blood-corpuscles of a normal subject was definitely hæmolytic. Cultures from the blood during life were sterile.

Course of the disease.—For a time there was decided improvement, both general and in the blood, in which the proportion of lymphocytes fell from 90 to 63. Then on October the 6th a rapid change for the worse occurred, with vomiting of blood and retinal hæmorrhages, and general oozing of blood from the mouth and nose. Death occurred on October the 10th. Throughout the white cell count showed a definite leucopenia.

Necropsy.—Numerous subserous petechiæ.

Liver, 27 oz., pale; spleen, 3 oz.; kidneys, 3 oz., pale; the bone-marrow appeared normal. The microscopy showed very slight but definite lymphocytic infiltration in the liver and kidneys.

A Case Showing the Development of Lymphocytic Leukanæmia.

CASE 3.—Boy, aged $7\frac{8}{12}$ years. Admitted to hospital under Dr. Poynton, September the 6th, 1920; died October the 13th, 1920.

Eight months before admission he had an attack of pneumonia, since when he had

never recovered his health. For two months he had complained of listlessness and pains in the limbs, and had become very pale.

On admission he was very anæmic and there were large purple bruises on his legs. The liver was easily felt below the costal arch, and the spleen just palpable on deep inspiration. There were numerous retinal hæmorrhages. The lymphatic glands were not enlarged.

The course of the illness was steadily progressive, with numerous hæmorrhages, swinging temperature and rapidly increasing anæmia.

The first blood-count was as follows: Red blood cells, 2,160,000 per c.mm.; white cells, 17,200 per c.mm.; hæmoglobin, 35 per cent.; polymorphonuclears, 1 per cent.; colour index, 0·8; lymphocytes, 99 per cent.

The particular feature in this case was the rapid development of a severe leucopenia, the white cell counts running thus: September the 7th, 17,200; 14th, 12,200; October the 8th, 3800; 12th, 3200 per c.mm.

The red cell count fell to 770,000 per c.mm. and the hæmoglobin to 15 per cent.

The necropsy showed very little. The bone-marrow was dark red and not fluid. In the liver around the portal areas only were visible on section numerous areas of lymphocytic infiltration.

This case in many respects during life resembled an anæmia gravis (aplastic anæmia). The appearance of the bone-marrow and the infiltrations in the liver pointed to a lymphatic leukæmia.

MYELOID LEUKÆMIA.

The two cases of myeloid leukæmia, both infants, showed some remarkable points of differences from the lymphatic group.

The spleen reached an enormous size, and the total count of white blood cells, 400,000 per c.mm., exceeded any met with in the lymphatic cases. Then, again, there were numerous myelocytes and a considerable number of nucleated red blood cells.

The lymphatic glands may be as large, if not larger, than in lymphatic leukæmia. Pathologically perisplenitis was a striking feature, and Leishman's stain showed that in the cellular infiltrations in the viscera there were many myelocytes. The enlarged mesenteric glands were deep red in colour. The diagnostic difficulty in one case was not from lymphocytic leukæmia, but from von Jaksch's anæmia.

It is remarkable that both the cases of myeloid leukæmia were male infants of four months of age. The cases are so striking that we give them in some detail:

CASE 1.—Male infant, aged 4 months. Admitted March the 23rd, 1920, and died April the 6th.

He was admitted under Dr. Poynton for swelling of the abdomen. A breast-fed child, he weighed 12 lb. at two months, since when he had been getting more anæmic and was wasting. Three weeks before admission he had an attack of bronchitis.

He was pale and flabby. The temperature was raised and reached 100° F. The spleen reached the iliac crest and the liver to the umbilicus. There were no enlarged glands.

The blood-count showed: Red blood cells, 3,440,000 per c.mm.; hæmoglobin, 30 per cent.; colour index, 0·4; white cell count, 18,000 per c.mm.; polymorphonuclears, 31 per cent.; lymphocytes, 53 per cent.; myelocytes, 16 per cent.

There were 14 nucleated red cells per 100 white cells.

This case was shown at the Children's Section of the Royal Society of Medicine as a probable example of von Jaksch's anæmia, and the general opinion favoured this view.

On March the 27th another blood-count showed a great change in the condition, for both the total white cell count and myelocyte proportion were rising rapidly, and on April the 4th the white cell count had risen to 145,200 per c.mm. ! Nineteen per cent. of these were myelocytes, and there was a high percentage of nucleated red cells. It should be added that on April the 1st a fifteen minutes' exposure to X rays was given over the splenic area, but the child failed very rapidly with high fever and diarrhœa, and died on April the 6th.

The Wassermann reaction was negative.

A film of the blood sent to Dr. J. S. Fowler, of Edinburgh, was judged by him to be characteristic of an adult myeloid leukæmia.

Necropsy.—Smears and cultures were made from the liver, spleen and heart's blood with negative results. Some Gram-positive cocci were seen in the films of the bone-marrow.

The *spleen* weighed $10\frac{1}{2}$ ozs. There was much perisplenitis, with adhesions to the omentum, abdominal wall and liver.

On section the Malpighian corpuscles were obscured by lymphoid elements.

The *liver* was large and pale, and weighed 14 oz.

The *bone-marrow* was red, soft and gelatinous.

The *mesenteric glands* were much enlarged.

The *kidneys* were very pale, weighed each $1\frac{1}{4}$ oz., and showed in their cortices petechial hæmorrhages.

These were the chief macroscopic changes.

This was a most instructive case in illustrating the extreme rapidity with which the changes in the blood may occur—for in ten days the total white cell count had risen from 18,000 per c.mm. to 145,200, and the myelocyte count from 16 per cent. to 19 per cent.

Such an event naturally suggests the possibility that in acute leukæmia the earliest phases in the blood may be passed through very rapidly, and take us some short step toward the explanation of the fact that so many cases of leukæmia are first under observation in an advanced stage of the disease.

CASE 2.—Male infant, aged 4 months, was admitted on March the 17th, 1921, and died March the 22nd. He had been wasting and vomiting for two months. He was an only child and there had been one previous miscarriage. Two months before admission he had an attack of bronchitis and pneumonia, and he was never well after this. He had been fed on cow's milk and water. On admission the temperature was 99° F. Pallor and petechial hæmorrhages were present. The liver reached the umbilicus, the spleen to the iliac crest. Slightly enlarged glands were felt in the neck, axillæ and groins. There was some change.

The blood-count was as follows : Red corpuscles, 3,120,000 per c.mm. ; hæmoglobin, 50 per cent. ; colour index, 0·8 ; normoblasts, 12 per 100 white cells ; megaloblasts, 4 per 100 white cells ; white blood cells, 401,600 per c.mm. ; polymorphonuclears, 63 per cent. ; small lymphocytes, 2 per cent. ; large lymphocytes, 0·5 per cent. ; large mononuclears, 1 per cent. ; myelocytes, 25·5 per cent. ; transitionals, 8 per cent.

Death occurred five days after admission.

Necropsy.—The *spleen* was large (8 oz. +) and showed much persplenitis with adherent omentum. It was six inches long and dark red in colour.

The *liver* was pale (weight 10 oz.) and mottled.

The *kidneys* (1½ oz. each) were pale and studded with small hæmorrhagic areas.

The *lymphatic glands*—the mesenteric glands—were enlarged, dark red and lobulated. Small white areas were visible in their structure.

The *bone-marrow* (of the tibia) dark red and diffuent.

Except in some petechial hæmorrhages in the other viscera and areas of broncho-pneumonia there was no point of particular interest.

Microscopy showed infiltration of the liver, kidney, spleen, thyroid and thymus with myelocytes.

MIXED LEUKÆMIA.

The three examples of this condition are now briefly considered ;

CASE 1.—Boy, aged 10 years, was admitted for multiple glandular swellings.

There was no point of interest in the family history or previous history of the patient, except that he had always been pale. The glands had commenced to enlarge seven weeks before admission, first in the neck, then in the axillæ, and lastly in the groins. There had been epistaxis and recently swelling of the abdomen.

On admission there was pallor, and large masses of glands were visible in the neck, axillæ and groins. The liver was enlarged to the umbilicus and the spleen also much increased in size. The temperature oscillated between 100° F. and 103°. The heart was rapid and there were hæmic systolic murmurs.

The blood-count was as follows : Red blood cells, 2,160,000 per c.mm. ; hæmoglobin, 30 per cent. ; colour index, 0·7 ; nucleated red cells, 3 per 100 white cells ; white blood cells, 440,000 per c.mm. ; polymorphonuclears, 3 per cent. ; lymphocytes, 90 per cent. ; neutrophile myelocytes, 6 per cent. ; transitionals, 1 per cent. The oxydase test was positive.

Purpura and oozing of blood from the mouth and nose were constant, and death occurred five days after admission.

Necropsy.—The *spleen* weighed 23 oz. and was 9 in. by 4½ in. in size. There was perisplenitis and the omentum firmly attached.

The *liver* showed perihepatitis and was adherent to the diaphragm and abdominal wall. Weight, 3 lb. 12 oz.

The *external lymphatic glands* were enlarged and deep red on section. The mesenteric glands were pale.

The *bone-marrow* was mottled, dark red and white, and gelatinous in consistence.

The *kidneys* weighed each 3¾ oz. and were pale. Immediately outside each hilum was a layer of soft tissue resembling granulation-tissue or blood-clot.

There were numerous subserous petechiæ throughout the body.

Sections of the viscera showed infiltration with lymphocytic cells.

CASE 2.—Boy, aged 8½ years, was admitted to hospital on June the 30th, 1921, and died on July the 6th.

An only child, always pale, three weeks before admission he had suffered from a "cold," and was feverish and languid.

On admission he was very ill and pale yellow in colour. The temperature was 101° F. The cervical, axillary and inguinal glands were palpable. The spleen was felt a finger's breadth below the costal arch ; the liver extended an inch downwards.

The heart was rapid and there was a basal systolic murmur.

There were bronchitic signs in the chest, and later pleural friction. Albumen appeared in the urine and blood in the stools. Pupura developed while in hospital.

The blood-count was as follows : Red blood cells, 2,384,000 ; hæmoglobin, 32 per cent. ; colour index, 0·6 ; white blood cells, 244,000 ; polymorphonuclears, 5 per cent. ;

lymphocytes, 87 per cent. ; myelocytes, 7 per cent. ; nucleated red blood cells, 8 per 100 white cells. The oxydase reaction was positive.

Necropsy.—The *spleen* weighed $4\frac{1}{2}$ oz., was firm and red and showed some perisplenitis.

The *liver* weighed 2 lb. 5 oz. and was pale fatty.

The *lymphatic glands* were slightly enlarged, and there was one tubercular caseous gland in the mesentery.

The *bone-marrow* was cream pink in colour.

The *kidneys* weighed each $1\frac{1}{2}$ oz., were pale, and showed hæmorrhagic nodules of lymphatic infiltration.

The *lungs* showed broncho-pneumonia, and there was some pleurisy.

Microscopically typical leukæmic changes were seen.

CASE 3.—Male infant, aged $1\frac{1}{2}$ years, was admitted to hospital on June the 8th, 1921, and died on the 17th.

An only child, he was admitted for swelling of the abdomen, chronic diarrhœa and increasing weakness. At Easter he had an attack of bronchitis, from which the swelling of the abdomen was dated.

A pale child, with the spleen and liver enlarged to the umbilicus. The temperature remained normal. After admission purpura appeared on the forehead and back.

The blood-count was as follows : Red blood cells, 3,336,000 per c.mm. ; hæmoglobin, 35 per cent. ; colour index, 0·5 ; nucleated red cells—normoblasts 320 per c.mm., megaloblasts, 64 per c.mm. ; white cells, 12,800 per c.mm. ; polymorphonuclears, 18 per cent. ; lymphocytes, 74 per cent. ; myelocytes, 3·5 per cent. : Eosinophils, 1 per cent. ; basophils, 2 per cent. ; transitionals, 1·5 per cent.

The course of the illness was rapid, and death occurred ten days later.

Necropsy.—The *spleen* weighed $12\frac{3}{4}$ oz. and was purple in colour. There was no perisplenitis.

The *liver* weighed 2 lb. 7 oz., was pale, and showed numerous small hæmorrhagic points throughout.

The *lymphatic glands* were not enlarged. The *bone-marrow* was redder than normal. The *kidneys* were enlarged, weighing 9 oz. each, and were pale, with subserous petechiæ scattered over the surfaces.

There was no other point of interest.

Microscopical examination of the above organs showed in all an intense infiltration with leucocytes, these cells being present in large numbers in the bone-marrow.

These three cases are of particular interest in their bearing upon the whole problem of the relation of classical myeloid and lymphocytic leukæmia to one another.

In Case 1 there are a high total white cell count, the presence of 6 per cent. of myelocytes and 3 per cent. of nucleated red blood cells, which differentiated it from the lymphocytic leukæmia. There was also perisplenitis. On the other hand, the percentage of lymphocytes was 90. These cells stained in the same way as those in acute lymphocytic leukæmia, but they were vacuolated and less defined in structure. Clearly such a case would be classified by some authorities as an acute myeloblastic leukæmia, but to us the distinction from a combination of both forms seems one of extreme difficulty.

Case 2 presented essentially the same problems for consideration.

Case 3 would seem to show an even less differentiated blood picture. In this case the total white cell count was only 12,800 per c.mm. and the myelocytes 3·5 per cent., and there was no perisplenitis. The relative lymphocyte count was 74 per cent. There were, however, nucleated red cells and the spleen was enlarged to the umbilicus.

Of all the cases this in some respects most closely resembled the myeloid leukæmia in an infant of 4 months, when in the stage at which it was diagnosed as a von Jaksch's anæmia.

It is remarkable how rapidly this case died, for the picture of the blood-count, though serious enough, did not suggest any peculiar virulence.

THE CHLOROTIC TYPE OF ANÆMIA IN CHILDREN.

Chlorosis is by definition a disease of young women at or shortly after the period of puberty, and the cause is unknown. It is an old dispute whether or not the disease can be said to occur in the other sex or in children before the age of puberty; but it is an academical rather than a practical controversy, since it is not disputed that an anæmia resembling chlorosis in the alterations of the blood corpuscles and the hæmoglobin is a common affection at all ages of life. We have, therefore, described these cases as anæmia of the chlorotic type.

Probably the most common underlying cause of such anæmia is rickets, and it is interesting to find that a disease, which is essentially a disease of nutrition, appears to have the same effect upon the production of blood as chlorosis. At the same time it must be pointed out that there is an abundance of other cases of anæmia of the chlorotic type in patients who show no signs of rickets, who are indeed long past the age at which rickets is an active factor in health. The anæmia of children of school age, which is apparently the outcome of a combination of many factors—ill-chosen food, defective ventilation, defective light, latent infections of the nose and throat, want of the proper amount of sleep, and possibly over-work, either mental or physical—often assumes precisely the characters of a chlorotic anæmia, and with the correction or elimination of these factors is benefited rapidly by the administration of iron. Nothing is more striking than the rapid return to health of such patients when, removed from their previous environment, they react to iron.

There is, however, a further question of some interest. If such patients, for whatever reason, are unable to receive appropriate treatment, do they pass on to the more severe and irremediable conditions of anæmia gravis or leukæmia; or in the case of infants to that anæmia with splenomegaly known as von Jaksch's pseudo-leukæmica infantum; or, again, is such an anæmia the precursor of such diseases as lymphadenoma or Banti's form of splenic anæmia? To all these questions the answer

is, we think, in the negative. With regard to lymphadenoma, Banti's form of splenic anæmia and leukæmia there is little or no evidence that the disease begins with any disturbance of the hæmo-poietic function; the alterations in the blood appear to be either characteristic as in the leukæmias, or even absent as in lymphadenoma in its early stages and not tending to assume the chlorotic type at any stage.

In regard to von Jacksch's anæmia, the evidence is to our minds no less convincing though of a somewhat different character; the infants who suffer from this disease have never been observed to pass from the simpler type of anæmia to the characteristic anæmia of the disease, and it is one of the remarkable features of the disorder that it almost invariably appears to the physician "full-fledged," so to speak, without any preliminary stage; the infant when first seen is already the possessor of an enormous spleen and of a marked myelocytosis.

The remaining question, whether the ordinary type of "school-age" anæmia with its "chlorotic" character may be a precursor of the severe and often fatal anæmia gravis is more difficult. Now and then the statement is made that the child has always been pale; much more often the onset of pallor, breathlessness and general failure has been sudden in a child who has previously enjoyed good health and been of a natural colour. On the other hand, some of these severe anæmias when treated with iron and arsenic react rapidly and satisfactorily, and climb back to health with the apparent ease of the "chlorotic" anæmia, suggesting that the factors, whatever they are which produce the "chlorotic" type, are the same which are concerned with the graver form.

The following is an example of a characteristic case of this type:

Girl, aged 2½ years. Admitted under Dr. Still on October the 5th, 1920.

She was admitted for anæmia, and there was a history of tuberculosis in the family. She had been breast-fed for four weeks. She was quite well until six weeks before, when she fell on her face, damaging an eye and her nose. From that date she gradually became paler and more short of breath. She seemed to have attacks of colicky pain on the left side. She presented an appearance of waxy pallor, but there was no wasting and no evidence of rickets. The liver and spleen were both enlarged and felt below the costal arch. The heart was rapid, the sounds were short, and there was a hæmic basal murmur systolic in time. The lymphatic glands were palpable. The other symptoms showed nothing of importance. The temperature on admission was 100, but became normal after a few days in hospital.

The first blood-count, on October the 6th, 1920, showed: Red cells, 2,250,000; hæmoglobin, 20 per cent.; colour index, 0·4; white cells, 8600. Differential count: Polymorphs, 68 per cent.; small lymphocytes, 20 per cent.; large lymphocytes, 7 per cent.; large mononuclears, 1 per cent.; basophils, 1 per cent.; transitionals, 1 per cent.; megaloblasts, 2 per cent.

The child was treated with iron and arsenic, and three weeks later the red count had risen to 4,160,000, the hæmoglobin to 44 per cent., and the colour index to 0·53.

The change in the child was remarkable, the waxy pallor being replaced on the cheeks by a healthy pink colour.

Another striking case was that of a girl, aged $2\frac{1}{4}$ years, who was admitted under Dr. Hutchison on May the 5th, 1921, for severe anæmia with a large liver and spleen. The blood-count showed 4,926,000 red cells, hæmoglobin 35 per cent., colour index 0·3. She was treated with 15-gr. doses of pulv. ferri carb. sacch., and four months later the red cells had risen to 5,260,000, the hæmoglobin to 50 per cent., and the colour index to 0·6. The change in the child was equally striking.

LYMPHADENOMA.

There were five examples of this condition, and it is apparently a rare disease as compared with leukæmia, to judge by the number of cases admitted to the hospital. Four of the cases were boys, and were aged between ten and twelve years; one was a girl of nine months.

In three of the cases there was a previous history of measles and whooping-cough; in one a family history of tuberculosis.

In three cases the first symptom to attract attention was enlargement of the cervical glands. In one there was an attack of abdominal pain, and in the remaining case weakness, fever and wasting had led to the diagnosis of tuberculosis.

Enlargement of the spleen occurred in four cases and in one instance it reached to the umbilicus. Jaundice probably from mechanical pressure was present in two cases. Wasting was a prominent feature, contrasting in this respect with leukæmia. The lymphatic glands were much enlarged in the neck in three cases, and in these to a lesser degree also in the axillæ and groins. In one the popliteal glands were enlarged. In two the abdominal glands were the first to increase in size, and with them the inguinal glands. In these the cervical and axillary groups showed very little change. The glands were discrete and soft in the acute phase, firmer in the more chronic. There was no matting.

The fever was of two types—the continuous and intermittent. There was no example of the remittent type.

Pressure symptoms occurred late in the illnesses.

The blood picture was that of a moderate secondary anæmia passing later into a severe phase. In two cases the white count was in one normal, in the other increased, whereas in three where the disease was well advanced there was a leucopenia.

The microscopic pathology of the glands in the acute cases showed many epithelioid and lymphadenoma giant-cells. In the more chronic cases there was much fibrous tissue formation, obscuring the lymphoid elements.

In the spleen much the same picture was presented, with the occurrence of numerous epithelioid and lymphadenoma giant-cells. In advanced

cases no splenic tissue remained. In the liver deposits of epithelioid cells could be seen around the portal spaces. These deposits superficially resembled leukæmic infiltrations, but careful examination showed the epithelioid character of the cells.

The differential diagnosis.—(1) Tuberculosis of the glands is usually associated with matting of the glands and irregular fever, and the splenic enlargement is absent. We did not meet during our period of observation with one of the unusual examples of glandular tuberculosis with intermittent fever, which resemble lymphadenoma so closely as to necessitate excision and examination of a gland to decide the diagnosis.

(2) Leukæmia is excluded by the blood picture.

(3) Rare cases of congenital syphilis with general glandular enlargement and gummata in the spleen and liver may clinically bear a most striking resemblance to lymphadenoma, but the Wassermann reaction serves to exclude this condition.

(4) Another very rare condition is a general glandular septicæmia in which there is enlargement of the spleen. In such cases some of the glands break down and form abscesses, and excision and examination of one of them will show an absence of the characteristics of lymphadenoma.

(5) Miliary tuberculosis and typhoid fever may simulate lymphadenoma of the acute abdominal type. The rapid course of the one and the Widal reaction in the other are points of distinction, and in the majority of cases a general clinical review gives other data.

(6) Lymphosarcoma is more localised and rarely shows enlargement of the spleen and the fever of lymphadenoma.

An Example of the Abdominal Type of Lymphadenoma.

A boy was admitted to hospital on December the 14th, 1920, when aged 11 years. The child had been ailing for four months, and had been diagnosed as pulmonary tuberculosis at a tuberculosis dispensary. He was an only child. He had previously had measles and whooping-cough at three years of age.

On admission he was well grown, but rather pale. He had two carious teeth. There were signs of bronchitis present and the abdomen was full. The spleen was just palpable and the sclerotics had a faint jaundiced tint. There were two enlarged glands in the neck.

While in hospital the child had recurring attacks of prexia. The temperature rose in a step-ladder fashion to 104° F., remained there for a week, and then slowly subsided, the whole process taking about a fortnight.

These intermittent attacks of pyrexia recurred at irregular intervals, one attack following immediately on another, or there might be an interval of several days or weeks.

During the pyrexial periods the child felt ill, went off his food, grew visibly paler, his spleen enlarged, and he lost flesh, the abdomen became full and tumid. It was during this stage of the disease that the diagnosis of typhoid fever might be made.

During the apyrexial periods the child distinctly improved, and the glandular and splenic enlargements subsided.

A gland in the neck was excised. Pathologists differed widely in the diagnosis, but the majority leaned towards lymphadenoma.

Gradually his condition grew worse, and in the intermissions he failed to make up the ground lost during the periods of fever. He had a sharp attack of epistaxis. Œdema of the lungs developed and his heart failed, and he died on July the 25th, 1921. His blood picture on admission showed nearly five million red cells, with 85 per cent. hæmoglobin, and 4800 white cells of normal proportions. A month later his red cells were four millions, 70 per cent. hæmoglobin, with 3400 white cells. The count fell continually, until three weeks before he died it showed two million red cells, 2600 white cells, of which 57 per cent. were polymorphs, hæmoglobin 28 per cent.

Necropsy.—The abdomen was distended. There was no enlargement of the cervical glands. The bronchial glands were enlarged and some were pigmented. The lungs were œdematous—a little fluid present in the pleura and pericardium. The heart weighed $6\frac{1}{4}$ oz., was pale, showed tabby-cat markings, with petechial hæmorrhages beneath the endocardium. Three ounces of fluid were present in the abdominal cavity. The liver was large, 44 oz., yellow suet-like bodies were present; the spleen weighed 25 oz., and measured 10 in. by 5 in. by 3 in. It was soft, and the surface was scarred and raised in areas like infarcts—not a typical hard-baked spleen. On section it was more characteristic. The kidneys weighed 5 oz. and were pale. A definitely caseous tuberculous gland was present in the mesentery. The glands about the hilum of the liver and pancreas were enlarged. Microscopically the liver and spleen were typical of lymphadenoma, so also the glands. The kidneys showed no lymphadenomatous infiltration.

Royal Society of Medicine.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

Friday, January the 27th, 1922.

The President, Sir ROBERT JONES, K.B.E., in the Chair.

Abnormal Adiposity following Meningitis.—Mr. A. LEVISEUR.—The patient, a girl, now aged $2\frac{1}{2}$ years, was admitted to hospital aged 5 months, suffering clinically from meningococcal meningitis, which had commenced ten weeks previously. No meningococci were found in the cerebro-spinal fluid. Energetic treatment by antimeningococcal serum intrathecally and intravenously. To-day, two years after the onset, she presented the appearance of a woman of 40 rather than that of a child. There was an abnormal deposit of subcutaneous fat all over the body, most marked in the region of the breasts and thighs. She had never learnt to walk properly owing to defective co-ordination. Though her head was two inches larger than usual in a child of her age, she appeared intelligent and bright. A skiagram of the skull showed no bony abnormality in the region of the pituitary gland. After administration of 50 grm. of glucose no sugar was found in the urine. The interesting points in the case were the extraordinary fatness of the child and the good recovery after meningococcal meningitis.

Defective Ossification of Skull.—Dr. E. A. COCKAYNE showed a child, aged 5 years and 8 months. There was a considerable interval between the two halves of the frontal bone, between the frontal and parietal bones, and

between the two parietal bones. The edges of the bones were slightly raised. The anterior, posterior and lateral fontanelles were all open. X rays showed bones of uniform and normal thickness. The head was well shaped and of average size (20 in.). The clavicles were normal. There was no history of fracture, and the long bones were not deformed. A large vein ran from the base of the nose upwards along the course of the frontal suture. On coughing the apex of the right lung bulged above the clavicle. The condition might be an incomplete form of cleido-cranial dysostosis. The clavicular defect in this disease was very variable and sometimes only unilateral.

Case for Diagnosis.—Dr. E. BELLINGHAM SMITH showed a boy, aged $4\frac{1}{2}$ years, in whom the diagnosis seemed to rest between a case of Hirschsprung's disease associated with chronic bronchitis and emphysema and some form of chronic tuberculous infection.

Specimen of Teratoma.—Dr. E. BELLINGHAM SMITH and Mr. E. A. SHAW.—The specimen was from an infant, aged $3\frac{1}{2}$ months, who was admitted to hospital for progressive enlargement of the abdomen. There was a large tumour filling the whole of the left loin and projecting forward and inwardly so as almost completely to occupy the whole of the left side of the abdominal cavity. The child was breast-fed and there were no symptoms beyond enlargement of the abdomen. Four days after admission the temperature rose suddenly to 104° F. and the child became seriously ill, with vomiting and green stools. Drowsiness and coma supervened, and the child died in three days. Post mortem the teratoma was found occupying the upper half of the left side of the abdominal cavity, and intimately adherent to the stomach, spleen and left lobe of the liver. The specimen showed solid and necrotic areas, and at the upper side on its anterior aspect communicated directly with what appeared to be a large—1 in. by 1 in.—ulcer in the stomach. The edges of the ulcer were healed and smooth. Sections from the tumour showed skin, hair-follicles, connective tissue, muscle, cartilage, lymphoid tissue, etc.

February the 24th, 1922.

The President, Sir ROBERT JONES, K.B.E., in the Chair.

(?) **Congenital Mitral Stenosis.**—Dr. B. T. PARSONS-SMITH showed a boy, aged 15 years, who was undersized, delicate-looking, poor in physique and general development, weight 5 st. Mentality about the average. No previous history of illness. Present condition :—Symptoms : Breathlessness on going up stairs and cough on exertion. Physical signs : Throat healthy, heart enlarged, præcordium prominent, engorgement of superficial veins of upper thorax, heart rhythm regular but fast, presystolic thrill at apex, loud first sound and systolic shock, pulmonary second sound accentuated, vessels normal, blood-pressure 130 mm. systolic, 85 mm. diastolic, no jugular or visceral stasis. The electro-cardiogram showed a regular heart-beat at 120. The individual complexes were composed of the normal series of waves in normal sequence; the auricular wave was unduly prominent and at times bifid. The P.R. interval varied from 0.18 to 0.20 seconds; right ventricular preponderance was well displayed.

Case for Diagnosis.—Dr. B. T. PARSONS-SMITH also showed a boy, aged 11 years, who had suffered from palpitation as long as he could

remember, and shortness of breath on exertion. He had had a slight attack of measles at 3, and when examined by the school doctor at $4\frac{1}{2}$ was certified to be suffering from heart disease. Present condition: General development poor. Slightly prominent præcordium. Heart enlarged; apex beat fifth space, $3\frac{3}{4}$ in. from mid-sternal line; rhythm regular; systolic and harsh diastolic murmurs at aortic base, second sound accentuated at base of heart, vessels not thickened. Pulse regular. Blood-pressure—systolic 125, diastolic 70. No venous engorgement. The electro-cardiogram was normal. There was no suggestion of left ventricular preponderance. Orthodiagraphic record indicated exaggerated pulsation and width of aortic shadow. The question was whether he had acquired damage, or whether it was a congenital lesion, such as deficiency of aortic cusps or deficiency of the septum dividing the truncus arteriosus in the process of development.

Arthritis of Both Hips.—Mr. B. WHITCHURCH HOWELL showed a case in a boy, aged 4 years.

Complete Transposition of Viscera with Congenital Heart Disease.—Dr. E. A. COCKAYNE showed a female child, aged 2 years, with marked cyanosis and clubbing of fingers and toes. Heart enlarged. Systolic thrill and murmur at right base. Electro-cardiogram showed in Lead 1 inversion of all the waves. The heart lesion was regarded as pulmonary stenosis and there was perhaps patent septum ventriculorum as well. Complete transposition of viscera was proved by screen examination with X rays.

Congenital Aortic Stenosis with Superimposed Rheumatic Infection.—Dr. E. BELLINGHAM SMITH showed a boy, aged $15\frac{1}{2}$ years, who had been brought to hospital for breathlessness. He had always been delicate, and was known to have had "heart disease" since the age of 3 years. At 8 years of age he was admitted to hospital for rheumatic fever. On examination the child was ill-developed, anæmic and breathless even at rest. The heart was enlarged, the cardiac dulness extending some 2 in. outside the nipple line. The left side of the chest was prominent and there was a marked heavy impulse. At the base over the aortic area there was a distinct purring systolic thrill, and associated with it was a harsh loud systolic murmur conducted up to the right clavicle and into the vessels of the neck. The second aortic sound was absent. At the apex separate systolic and diastolic murmurs were heard, suggesting an acquired mitral stenosis.

Case of ? Dyspituitarism, ? Hypernephroma.—Dr. E. BELLINGHAM SMITH showed a youth, aged 19 years, admitted to hospital for pain in the sides, back and hips. He had always been short and fat. On examination he was very stunted and obese with a bloated and plethoric countenance. The genitals were infantile. The voice was high-pitched and shrill. The urine contained 6.5 per cent. of sugar on his ordinary diet. Systolic blood-pressure 2.18 mm. A skiagram showed little or no change in the region of the sella turcica. Although the sexual infantilism and obesity suggested Frölich's syndrome, this diagnosis was negatived by the presence of glycosuria. Against the diagnosis of cortical suprarenal tumour was the long duration of the condition and absence of sexual precocity. On the other hand, the plethoric countenance, obesity and glycosuria and possibly the widely dilated pupils were of suprarenal origin. Possibly some general

atrophic condition of his pituitary gland might explain the condition. Extract of the whole gland was therefore being given.

Tonic and Hypertonic Hearts in Children.—DRS. C. P. LAPAGE and W. J. S. BYTHELL showed skiagrams of abnormal conditions of the heart in children. Apart from valvular disease, two abnormal conditions were shown to occur—(1) hypertonia, (2) atonia. Physical tests on children who had tic or habit-spasm, tachycardia and nervous emotional symptoms had suggested the existence of a condition of over-action and over-contraction of the heart. X-ray examination of these cases showed that the heart was in a condition of hypertonia, *i. e.* screen examinations made from back to front showed the lateral diameter to be decreased at the base and the vertical diameter to be increased. The natural convexity of the heart to the left tended to be obliterated. The hypertonic condition was easy to recognise by X-ray examination. The results of physical examination made by percussion and auscultation, and also by special tests, which brought the question of emotion, of exercise and of intrathoracic pressure into play, were correlated with X-ray examination in a series of 100 cases. The results were substantially in agreement. The value of X-ray examination in estimating the degree of atonia was also demonstrated. Certain hearts which were hypertonic at the first examination became atonic while under observation as the result of some toxæmic condition, such as tuberculosis, rheumatism or chorea.

CLINICAL SECTION.

May the 12th, 1922.

Recurring Thyroiditis without other Disturbances.—MR. E. ROCK CARLING showed a girl, aged 7 years, admitted to hospital in July, 1921, with a much enlarged thyroid in which there were four specially hard masses. No other abnormality was detected, and the swelling of the gland subsided spontaneously. In October, 1921, February, 1922, and May, 1922, she was readmitted to hospital, on each occasion with a similar condition. Her weight in July, 1921, was 2 st. 13 lb., in May, 1922, 3 st. 5 lb.

Case of Enlarged Liver.—DR. J. WALTER CARR showed a boy, aged 12 years, who was in good health until about 7 months ago, when he began to suffer from attacks of pain in the epigastrium (not related to food), with nausea and occasional vomiting. Two or three months ago a swelling was first noticed in the upper part of his abdomen. He continued to go to school until two or three days before admission to hospital on March the 27th. His appetite had been very large. He had never been abroad. The abdominal swelling was due to a greatly enlarged liver reaching from the 5th rib above nearly to the umbilicus. The edge was sharp, the surface smooth and not tender. There was no ascites and there had never been any jaundice. When the boy was first seen his spleen was distinctly palpable below the costal margin, but it had diminished in size and could now only just be felt. There was no enlargement of the external lymphatic glands. Wassermann reaction on blood negative. The chief feature of the blood examination was a definite leucopenia.

Sarcoma of Femur.—Mr. H. TYRRELL GRAY and Mr. B. SANGSTER SIMMONDS.—The patient was a boy, aged 7 years, admitted to hospital on April the 28th, 1922, complaining of pain in the right thigh, worse at night, of continuous nature, dull and aching in character and of three months' duration. He limped on walking. Wassermann reaction negative. Investigation showed fusiform swelling of shaft of right femur in its middle, very tender on pressure. Operation May the 10th. Resection of sarcoma of femur; fibula graft. X-ray examination showed absorption of about 1 in. of middle of shaft of femur, this area being surrounded by a fusiform sheath of compact bone interrupted at one spot.

SECTION OF DERMATOLOGY.

March the 16th, 1922.

Hydroa aestivale.—Dr. J. M. H. MACLEOD showed a typical case in a girl, aged 11 years, who had had the eruption during the summer weather for the last five years. The type of lesion was intermediate between the lesions of the summer prurigo type of Hutchinson and the more vacciniform type described by Bazin. They consisted of dusky conical papules, about half the size of a lentil, and occasional small vesicles, some of which became secondarily infected by scratching. These, when shrivelled, formed a small scale, which on separating left a pitted scar. They were present in the usual situations, viz. the back of the hands and wrists, the face and ears, and were absent on the neck and the covered parts of the body. The individual lesions healed up in a few days, but the condition was rendered permanent by the successive crops of papules. The lesions usually appeared about the spring and lasted well on until the end of the autumn. Their occurrence in a girl was of interest, owing to the old idea that they usually affected boys—an idea not in accordance with Dr. MacLeod's experience. There was little doubt that the actinic rays of the sunlight were responsible, but there were probably other exciting factors, as the eruption was aggravated by wind on a dull day. The type of lesion was somewhat different to that in chronic solar dermatitis, so that probably there was some underlying idiosyncrasy. Treatment had so far been disappointing.

SECTION OF ORTHOPÆDICS.

February the 7th, 1922.

Two Cases of Deformity of the Hip.—Mr. R. C. ELMSLIE.—Case 1: Boy, aged 5 years, who had limped from the time of beginning to walk at the age of 18 months. The left lower limb was 1 in. short, the great trochanter being raised; movements of the joint were free. The head of the femur could be felt in its normal situation, but on flexing and adducting the hip it appeared on the dorsum ilii. Trendelenburg's sign positive. X-rays showed a right-angled deformity of the neck, an absence of ossification of the head of the femur, and an enlargement upwards of the acetabulum. It was apparently a case of subluxation of the head of the femur with coxa vara and defective ossification of the head of the bone.

The condition was probably congenital, possibly due to an early arthritis, as the boy had had pneumonia at the age of 4 months, when he had some trouble with the left leg. Case 2: Girl, aged 12 years, with coxa vara of the cervical or adducted type, showing a positive Trendelenburg sign, a diagnosis from congenital dislocation apart from radiographic appearances being very difficult.

Osteochondritis of Head of Femur.—MR. E. LAMING EVANS showed a girl, aged 11 years, who had been treated by hip extension and immobilisation as for tuberculous disease of the hip for $4\frac{1}{2}$ years. All movements of the hip were free. Shortening $\frac{3}{4}$ in. Trochanter raised $\frac{3}{4}$ in. above Nelaton's line. X rays showed flattening and spreading of the capital epiphysis upon the femoral neck. There was a clearly defined centre for the lesser trochanter of increased density suggestive of the radiographic appearance of the tarsal scaphoid in Kohler's disease. The centre of the lesser trochanter on the right side had not yet appeared. It was suggested that the osteo-chondritic affection had exceeded the usual limits and extended to the region of the lesser trochanter.

Recurrent Subluxation of both Knee-joints (Snapping Knees) in a Baby.—MR. H. A. T. FAIRBANK showed a female infant, aged 10 months, who for three months had been noticed to snap the right knee in a semi-flexed position on many occasions. Similar snaps occurred in the left knee on two occasions. Voluntary displacement took place in an outward and slightly forward direction. In semiflexion passive displacement of the tibia was possible, particularly in an outward direction; the tibia slipped back with a snap. No hyper-extension of knees. Other joints normal. It was proposed to treat the case with some simple splint to prevent the child from subluxating the knees and to order massage.

Infantile Monoplegia of Left Leg.—MR. P. JENNER VERRALL showed a girl, aged 14 years, whose disability was said to date from infancy. The question was whether it was a case of an upper motor neuron lesion with secondary degeneration of the lower neuron, or of poliomyelitis and polioencephalitis affecting the same part. Mr. Verrall regarded the former as the more probable, but in the discussion the case was regarded as more likely to be an example of poliomyelitis.

Dislocation of Patella and Contraction of Knee.—MR. H. TYRRELL GRAY showed a girl, aged 5 years, who had had dislocation of the right patella since she began to walk. At first she was able to put it in and out at will, but since the other leg had been in plaster for congenital dislocation of the hip, the right patella had been permanently out. Before being in plaster the child was able to hobble about with a twisting movement of the right knee, but now when she tried to walk she fell down, the knee giving way beneath her. She never complained of pain. She held the foot everted and the knee flexed slightly. There were no deformities in family. There was permanent external dislocation of right patella with the knee-joint in a position of flexion, 120° , and genu valgum. Full extension impossible. Right foot everted with marked external rotation of right tibia at knee-joint; condyles of femur projected forward prominently. Right patella small, lying behind external condyle and impossible to reduce. No marked muscle-wasting. Other joints normal. Present condition of hip satisfactory. X-rays showed head of femur in acetabulum.

Apophysitis of Tibia.—Mr. P. B. ROTH showed a boy, aged 13 years, with Schlatter's disease of both tibiæ, which had subsided entirely with no other treatment but rest in bed for six months. Sir Anthony Bowlby in discussing the case stated that the condition had been described by Sir James Paget in 'Studies of Old Case Books,' published in 1891.

SECTION OF OTOTOLOGY.

February the 17th, 1922.

Localised Suppurative Meningitis over the Motor Cortex following Acute Mastoid Suppuration; Drainage; Recovery.—Mr. W. H. OGILVIE showed a girl, aged 12 years, who had been admitted to hospital with the following history: Sudden pain in left ear on November the 19th, 1921. Otorrhœa commenced in the evening of November the 20th; ceased in the morning of November the 21st, but recommenced in the evening. On admission to hospital the temperature was 101·4° F., pulse 128. Slight purulent left otorrhœa. No swelling, redness or superficial tenderness over mastoid. Tenderness on firm pressure over mastoid antrum and tip of mastoid process. The antrum was opened, found to contain granulations, but little pus. The mastoid process was chiselled away down to dense bone surrounding lateral sinus. The dura of the middle fossa was exposed. Infected cells and carious bone were found in the tip and along the anterior border of the mastoid process. The cavity was treated with B.I.P. and sewn up over glove drain. The temperature and pulse kept down for thirty-six hours and then commenced to rise again. November the 25th, 10 p.m.: Temperature 103·6° F., pulse 140; mental condition normal. November the 26th, 10 a.m.: Temperature 101·4° F., pulse 120; very drowsy; did not appear to grasp questions; eye reactions normal; knee-jerks and plantar reflexes normal; no paresis. The wound was opened, but no further bone disease was discovered on lumbar puncture. The cerebro-spinal fluid was under slight tension and showed lymphocytes and polymorphs in excess; no organisms. Slight reducing power; albumin 0·03 per cent. On November the 28th the drowsiness and inability to answer were increased. There was obvious paresis of right arm and hand and right side of face. The right abdominal reflexes was diminished and Babinski's sign was present on the right side; eyes reacted normally to light; no optic neuritis. Localised meningitis over the left motor cortex was diagnosed. A further operation was performed, and by removal of bone and incision of dura a roughly circular patch of purulent meningitis the size of a two-shilling-piece was found, overlying the middle third of the precentral convolution. A glove drain was inserted. During the next two days several Jacksonian fits occurred, involving the eyes, right side of face and right arm. November the 30th to December the 11th: No more fits; development of hernia cerebri; rapid improvement in mental condition; gradual improvement in paresis of arm and face. December the 12th: Right-sided sensory Jacksonian fit, involving arm, trunk and leg, and lasting about ten minutes; following this there was marked astereognosis in the right hand. The upper end of the wound was opened and a No. 8 catheter pushed under the dura in the direction of the face-arm sensory area in the post-central convolution. A collection of clear cerebro-

spinal fluid escaped. A glove drain was put along the track and four-hourly eusol dressings applied. Continuous improvement took place. The arm and face paresis cleared up rapidly. The hernia cerebri subsided in four weeks. The patient was discharged with the wound healed on January the 25th, 1922.

SECTION OF UROLOGY.

January the 26th, 1922.

Sarcoma of the Kidney.—Mr. CECIL ROWNTREE showed a boy, aged 8 years, on whom he had performed nephrectomy for renal sarcoma on April the 18th, 1920. In the subsequent discussion, Mr. J. D. MALCOLM recalled a case in which he had removed a kidney tumour from a child under two years of age in 1892, the patient being now alive and well. The tumour was called “a malignant adenoma” by Mr. Targitt, but Prof. Shattock had recently re-examined it and expressed the opinion that it was innocent. Abbe, of New York, had published two cases of prolonged survival of children after removal of renal growths. The longest living New York case and the London case, which might be considered complete cures after at least twenty and nearly thirty years, were operated upon within a week, respectively on November the 20th and November the 15th, 1892. All other recorded cases of renal neoplasm in children, when operation was survived, had so far shown a recurrence within five years, and frequently within eighteen months.

Specimen of Cystin Calculi from the Kidney of a Child.—Mr. J. B. MACALPINE.—The patient was a boy, aged 8 years, with typical pain in the left renal area. A skiagram showed good shadows of the calculi; on examination of the urine large quantities of cystin plates were observed, and the probable condition of the stones was suspected. The urine was sterile. Six stones were removed by nephro-lithotomy and the child made a good recovery. The stones were typical of the soft greenish-yellow calculi composed of cystin. One was large and occupied the pelvis of the kidney, and thus acquired its shape and proportions. As cystinuria was a familial condition, Mr. Macalpine examined the urines of the other members of the family, seven in all. In three cases cystin crystals were found in the urines—those of the mother, a sister and a brother. In all the cases the urines emitted a very foul odour, which was present even in the urines which did not show crystals. The smell appeared to result from the liberation of sulphur as sulphuretted hydrogen, and was possibly due to the decomposition of the sulphur amino-group.

Société de Pédiatrie, Paris.

February the 21st, 1922.

Disease of the Pineal Body.—M. M. P. WEIL, after alluding to M. Lereboullet's case (*vide* BRITISH JOURNAL OF CHILDREN'S DISEASES, 1922, xix, p. 43), recorded a case in a boy, aged 15 years, who for the past five years had presented the following evidence of disease of the pineal body: (1) Signs of cranial hypertension, such as headache, vomiting, epileptic attacks and excess of sugar in the cerebrospinal fluid without hyperglycæmia. There were no ocular disturbances or bradycardia. (2) Disturbance of general development shown by an abnormally rapid growth at the onset of the disease. The intellectual development was superior to the normal for a child of his age. (3) Abnormal development of the penis, erections, development of hair on the cheeks, axillæ, pubis and legs. (4) Symptoms of changes in other endocrine glands, besides the pineal body and testes, as shown by attacks of dyspnœa probably of thymic origin, widening of the sella turcica and marked polyuria.

Kyphosis of Adolescence with Atrophy of Vertebral Epiphysis.—M. LANCE showed a girl, aged 15 years, who had been suffering from a rigid dorsal kyphosis for a year. X rays showed three cuneiform vertebræ, one of which (the ninth dorsal) presented an absence of the anterior part of the vertebral epiphysis which normally existed at that age. The appearances were typical of those described by Schanz (1911) and Scheuermann of Copenhagen (1921) under the name of "apprentices' kyphosis." The condition occurred most frequently in boys between the ages of 14 and 17 years engaged in laborious work. The kyphosis was always dorsal and was sometimes accompanied by a certain degree of scoliosis. The condition was always refractory to treatment.

Familial Kyphosis of Adolescence with Partial Hypertrophy of Four Vertebræ.—M. LANCE also showed a girl, aged 16 years, who for the last five months had been affected with a lumbar kyphosis of rapid development with considerable hypertrophy of the spinous processes of the corresponding lumbar vertebræ. X rays showed four cuneiform vertebræ (twelfth dorsal and first three lumbar), the shape of which was due, not to atrophy of the anterior portion, but to hypertrophy of the posterior part of the vertebræ. The father showed a similar condition dating from childhood. M. Lance had been unable to discover a similar case in the literature.

Encephalitis with Congenital Ichthyosis and Left Hemiparesis.—MM. L. GUINON and VINCENT showed a boy, aged 9 years, who had been admitted to hospital with convulsions, abundant albuminuria and excess of urea in the cerebrospinal fluid. These phenomena disappeared, but paralysis of the palate and pharynx developed, with loss of knee- and ankle-jerks, hemiatrophy of the face and limbs on the left side, and marked mental impairment. The speakers concluded that the case was one of encephalitis in a child who had been affected with very slight hemiplegia in infancy.

Cervical Myelitis with Meningeal Reaction.—MM. GUINON and VINCENT showed a boy, aged 3 years, who had been admitted to hospital

with meningeal symptoms suggesting tuberculous meningitis. Rhizomelic paresis of both upper limbs then developed with internal strabismus, paralysis of the diaphragm and absence of atrophy. The origin of the condition was obscure. The case was not one of lethargic encephalitis, but bore some resemblance to Heine-Medin's disease, though that disease was rarely seen at that season of the year.

Traumatic Coxa Vara with Polyglandular Insufficiency.—MM. LAURENT and HALLOPEAU showed a boy, aged 17 years, who as the result of a slight fall developed a separation of the upper epiphysis of the femur. The patient showed signs of polyglandular insufficiency, especially as regards sexual development. His appearance was that of a child aged 13 years. Recovery took place without a plaster apparatus, leaving the appearance of a typical coxa vara. Treatment by opotherapy, consisting of thyroid, pituitary and testicular extracts, had an excellent effect upon the infantilism.

Traumatic Bullous Dermatitis.—MM. APERT and HALLÉ showed an infant, aged 2 years, who since birth had developed bullæ on the body containing a clear serous fluid on the slightest trauma. There was no eosinophilia in the blood or in the fluid of the bullæ, which dried up without leaving any scar or pigmentation.

Meningeal Reaction in Non-Specific Coryza.—MM. RIBADEAU-DUMAS and PRIEUR stated that they had recently observed a large number of cases of coryza in infants, several of whom had been admitted to hospital with their mothers, who were suffering from various influenzal manifestations, such as rhino-pharyngitis, pulmonary congestion and broncho-pneumonia. The coryza was not syphilitic, as was shown by clinical examination and the negative Wassermann reaction in the mother and child. An infant suffering from coryza since birth had several attacks of convulsions which were not affected by bromides, but were cured by lumbar puncture. Examination of the cerebrospinal fluid showed a large quantity of albumin, a lymphocytosis of 20 to 25 cells in a field, and negative Wassermann and colloidal benzoin reactions. Recovery took place. Subsequently lumbar puncture was performed on infants with coryza who did not show any nervous symptoms clinically, and a slight increase in the number of the lymphocytes and excess of albumin was frequently but not invariably found.

Intolerance for Cow's Milk; Breast-Feeding; Death on return to Cow's Milk.—MM. RIBADEAU-DUMAS and PRIEUR also recorded the case of an infant, aged 3 weeks, who had intolerance for cow's milk, as shown by repeated vomiting and green stools. His brother had died at the age of 6 weeks from the same cause. Rapid improvement occurred when a wet-nurse was employed, but vomiting reappeared on return to cow's milk. Resumption of breast-feeding caused the same improvement as on the first occasion. A month later, owing to the nurse's milk becoming scanty, sterilised cow's milk was given. Uncontrollable vomiting ensued, and death took place in five days. The autopsy showed a small retracted stomach, with hæmorrhages in the pyloric region, a normal intestine, absence of broncho-pneumonia, and thrombosis of the meningeal sinuses.

The case was probably an example of anaphylaxis. The speakers had since observed a child who presented similar symptoms, but subcutaneous injections first of woman's milk and then of cow's milk according to Weill's method (*vide* BRITISH JOURNAL OF CHILDREN'S DISEASES, 1919, xvi, p. 221) enabled feeding with cow's milk to be continued.

Thyroid Opothrapy in Hypotrophic Infants.—M. M. MAILLET stated that he had treated thirty-two maldeveloped infants, aged from 4 to 20 months, by administration of thyroid extract in doses ranging from 1 cg. to $2\frac{1}{2}$ cg. according to the case, and found that the drug had a remarkably rapid action not only on the weight and height, but also on the condition of profound apathy and lack of muscular tone so frequently present in these children. Dentition and development of the bones, especially those of the skull, were very rapidly affected. Anorexia, vaso-motor changes in the extremities, adenoids and chronic rhino-pharyngitis were also benefited by the treatment. The age of the patient was not a contra-indication to the treatment, several of the cases being aged from 4 to 6 months. The only contra-indication according to Maillet was an excessive degree of nervousness, insomnia, and acute or severe gastro-intestinal disturbance. In most of the cases the drug was given daily for a series of 10 days, after which an equally long interval was allowed to elapse. If a favourable effect was slow in taking place, the first course was prolonged to 15 or 20 days and was followed by an interval of 10 days, with subsequent series each of 10 days and intervals of the same duration. In cases of congenital syphilis in which the weight remained stationary in spite of specific treatment it was found to increase as soon as thyroid treatment was administered.

Abstracts from Current Literature.

Surgery.

Some aspects of the abdominal emergencies of childhood (*Brit. Med. Journ.*, 1922, i, p. 173).—J. FRASER says that these are limited in practice to the small and large intestines, chronic ulcerative and malignant conditions can be excluded, and the various mental conditions which lead to exaggeration in adults are not met with in children. The examination may often be facilitated by the administration of a little chloroform. Appendicitis may occur in infants as young as 4 months. It is usually not fulminant. Repeated attacks of sickness in children often denote appendicitis. Symptoms of appendicitis appear in the following order: (1) pain, epigastric, umbilical, or general, (2) nausea or vomiting, (3) local iliac tenderness, and (4) fever. Vomiting always occurs in children, except in retrocæcal cases, and if severe distension of the appendix has occurred, perforation may supervene. If the appendix lies low in the pelvis abdominal symptoms are few, but are replaced by suprapubic pain, frequency of micturition and diarrhoea. Further rigidity of the obturator internus may be produced, and demonstrated by the inability to rotate the flexed thigh inwards. In retrocæcal appendicitis rigidity of the external abdominal muscles is absent, but that of the

psoas and iliacus may be demonstrated by attempting to extend the thigh with the patient lying on the left side. The mesenteric appendix lies behind the bowel and beneath the mesentery, and this position is suggested by marked central muscular rigidity, umbilical pain, early and persistent vomiting, and early abdominal distension. As regards diagnosis, acute pyelitis must be considered, which is characterised by occurring most commonly in the female sex, by an early and high remittent temperature, by the marked prostration and the intense general irritability. Pain is less severe and is situated over the pelvis of the kidney. The urine is opalescent and contains a small amount of albumin, and if a microscopical specimen from the centre of the sample be taken and not from the deposit, pus-cells and coli bacilli are found. Cyclic vomiting may come on with great suddenness, the child looks very ill and drowsy and the urine contains acetone. Ileocæcal lymphadenitis is very difficult to distinguish from appendicitis. The glands are enlarged from tuberculosis and may be felt; occasionally these undergo attacks of lymphadenitis and cause severe abdominal pain. Vomiting ensues and may persist for 48 hours but subsides with characteristic rapidity. Fever is of early and not of late occurrence as in appendicitis. An abnormally high appendix when inflamed may cause symptoms resembling basal pneumonia or diaphragmatic pleurisy. Two tests are advocated. In appendicitis pressure on the left side of the abdomen increases the pain, while no alteration is noted in basal pneumonia. If the diaphragm be involved there is frequently an area of hypersensibility of collar shape in the region of the fourth cervical nerve. Primary pneumococcal peritonitis occurs in the female sex alone, infection occurring through the vagina and Fallopian tubes. Pelvic peritonitis occurs rapidly and may be quickly followed by general septicæmia. Concerning intussusception Fraser says that this is a disease of the poor due to dietetic indiscretions. The ileo-colic is the most fatal, the colic the most favourable variety. The latter may persist for weeks with incomplete obstruction and small extravasation of blood. In the enteric variety hæmorrhage may not occur till late in the disease. Henoch's purpura may be distinguished by a scanty purpuric eruption and an infiltrated and oedematous rectal mucosa. Volvulus in children is ileocæcal and does not affect the sigmoid. When hernia in children becomes irreducible strangulation rarely results.

CHRISTOPHER ROLLESTON.

Acute intussusception in children (*Dub. Journ. Med. Science*, 4th series, 1921, p. 242).—C. J. MacAuley emphasises the importance of early diagnosis and prompt treatment, and bases his remarks on the records of twenty-three consecutive cases under his care. The onset is nearly always dramatically sudden. A rectal examination should never be omitted. Diagnosis is rarely difficult, but acute colitis and Henoch's purpura must be borne in mind. Treatment is essentially operative and must be carried out as soon as possible. Inflation of the bowel by air or fluid *per rectum* is to be condemned. As the chief danger attending operation is shock, all measures to minimise shock should be employed. The two great essentials after operation are heat and fluids. Feeding should be begun at the earliest possible moment. Starvation in these cases is fatal. J. ALLAN.

Chronic intussusception (*Med. Journ. Austral.*, 1922, 1, p. 270).—H. H. Schlink removed by operation in a girl, aged 7 years, an intus-

susception of the cæco-ileo-cæcal variety, commencing at the caput cæci, and reaching below the junction of the pelvic colon and rectum. The result was successful.

F. R. B. ATKINSON.

Mobile ascending colon and duodenal obstruction as common causes of equivocal symptoms in the abdomen (*Dub. Journ. Med. Science*, 4th series, 1921, p. 399).—A. A. McConnell.—A girl, aged 12 years, was admitted to hospital as a case of intussusception. Three days before she had had acute pain across the upper part of abdomen. She vomited once copiously. The stools contained blood and mucus. Attacks of pain, intermittent since onset, relieved when sat on chamber. Physical examination negative except for tenderness on right side of epigastrium. At operation dilatation of duodenum down to crossing of superior mesenteric artery and freely mobile ascending colon loaded with hard fæces were found. As colopexy would have required another incision this was not done. X ray a few days after showed retention of barium in duodenum. Treatment was directed to unloading the colon. When this was done there was complete relief. If constipation is avoided there will probably be no drag on the artery.

J. ALLAN.

Notes on an unusual case of intestinal obstruction (*Med. J. Austral.*, 1920, II, p. 244).—J. Macarthur operated on a girl, aged 14 years, who made a successful recovery. The operation revealed an abnormally movable ileo-cæcal segment. The cæcum and colon had an unusually large mesentery which had twisted and strangulated the upper half of the small intestine.

F. R. B. ATKINSON.

Rupture of the bowel by compressed air (*Med. J. Austral.*, 1921, II, p. 538).—W. A. Halles records the case of a boy, aged 16 years. A conducting pipe of a cylinder of compressed air was turned close to the boy's buttocks. The boy collapsed and died the next day. The autopsy revealed a tear near the hepatic flexure and marked generalised emphysema. Only 25 cases are reported in the literature.

F. R. B. ATKINSON.

Recent advances in orthopædic surgery (*Lancet*, 1922, I, p. 879) — E. Laming Evans states that marvellous results accrue from transplantation of tendons. Arthrodesis of the ankle-joint in anterior poliomyelitis does not give satisfactory results and should be replaced by stability operations, attacking the subastragaloid and mid-tarsal joints. In congenital club-foot no bone removal should be undertaken in infancy or early childhood, and Phelps' operation is of a very limited application. Astragalectomy is satisfactory if backward displacement be performed so that the malleoli may engage the lateral aspects of the mid-tarsal joint. Bone grafting in cases of the spine should only be used in a small number of cases. Posterior root sections have proved unsatisfactory on the whole, and if performed for spasm in spastic paralysis have to be supplemented by re-education and exercises. Excision of the nerve-fibres supplying the spastic muscles is useful in such cases. Treatment of scoliosis by frame extension and fixation in plaster-of-Paris is disappointing. Increasing knowledge shows that in Calvé's disease (osteochondritis deformans juvenilis) there may be much bone destruction and consequent deformity, so that Thomas's splints, rest and extension have to be employed. The

author suggests that a similar disease attacks the spine which may cause dorsal kyphosis involving four to six vertebræ; such cases show few progressive signs and are not attended by abscess-formation.

CHRISTOPHER ROLLESTON.

The diagnosis of early hip-joint disease in children (*New York Med. Journ.*, 1922, cxv, p. 256).—**J. T. Rugh.**—The onset is insidious—usually between the ages of 2–15 years. There is often a history of measles or influenza and of some slight injury. The first symptom is an intermittent limp, but no pain. The limp is due to muscle spasm, Nature attempting to immobilise the joint. There is limitation of movement, and muscular atrophy begins early. Pain is a late manifestation. The temperature is slightly raised. X rays are of less importance than clinical examination; they may show absorption of bone and roughening of the surface of the cartilage but the plate must be unusually good to be of much value. The diagnosis has to be made from rheumatism, so-called growing-pains, synovitis, epiphysial infection after injuries or acute disease, infantile scurvy, spinal disease with contraction of the psoas muscle and coxa vara. In this latter there is a limp without muscular atrophy or limitation of movement, and the X-ray plate shows the alteration of the angle of the neck of the femur.

J. PORTER PARKINSON.

Legg's or Perthes' diseases (*Lancet*, 1921, i, p. 210).—**H. B. Roderick** differentiates between the symptoms of the various forms of hip disease. In early tuberculosis of the hip a few weeks' rest in bed may cause all symptoms to disappear, flexion and extension being but little restricted. Abduction and rotation are the movements first interfered with. On grasping the femur in the region of the condyles and rotating the femur, spasm of the abdominal muscles is easily demonstrated if the hand is placed on the abdomen between the iliac spines (Gauvain's sign). Pain on direct pressure below the middle of Poupert's ligament is an early sign of hip disease. Congenital dislocation is marked by great mobility of the thigh. On flexing the affected leg and adducting while manipulating the limb, so as to press the head of the femur away from the pelvis, two prominences, the head and the trochanter, can be felt. If only one protuberance is made out this is the trochanter and no dislocation is present. In coxa vara the limp is painless and there is limitation of abduction and internal rotation. In coxa adducta only abduction is limited. Perthes' or Legg's disease has now been described in 50 individuals, 40 being boys and 10 girls. The subjects of this disease are in good health. There may be some elevation of the trochanter, flexion and extension are free, but abduction is much restricted. There is limp, with some amount of pain. There is no crepitation on movement. On X-ray examination there are light spots on the head which are islets of cartilage, showing irregularity of ossification (which suggests an imperfect blood supply as a causal factor). There is usually a history of injury four to six months previously. It may occur on the sound side after reduction of a congenital dislocation. Gauvain thinks that it may be due to a protozoal infection. Roberts thinks that it is due to congenital syphilis as it is an osteochondritis which is common in specific disease. Trauma is more common in boys, and further, the disease is limited to the epiphysis, which is most liable to injury.

CHRISTOPHER ROLLESTON.

Perthes' disease ('*Dub. Journ. Med. Science*,' 4th series, 1921, p. 431).—At a meeting of the Royal Academy of Medicine in Ireland, Section of Surgery, **C. J. MacAuley** showed radiograms of two cases, one occurring in a boy, aged 4½ years, the other in a girl, aged 7 years. In both children there was a limp, with slight muscular wasting and limitation of abduction. The femoral heads showed flattening and fragmentation of the epiphysis.

J. ALLAN.

Pseudo-coxalgia ('*Lancet*,' 1921, I, p. 20).—**H. A. T. Fairbank** describes this disease as fairly common between the ages of 3½ to 12 years. It begins with limping and is accompanied by little or no pain. There is slight wasting of thigh and buttock. Abduction is limited while flexion is free. Internal rotation and extension may be somewhat limited. There is no pain on jarring the trochanter or the heel. On X-ray examination the epiphysis of the head of the femur is flattened from above downwards, irregular in outline and density or even broken up into fragments. The epiphysal line is less distinct than usual. The neck of the femur is thickened on its lower side. The cartilaginous head is little if at all distorted. Cases always recover with or without treatment. The limp is slowly and gradually lost. No abscess-formation or other complications are known. Neither tubercle nor syphilis can be incriminated. Perhaps trauma interferes with the blood supply of the femur.

CHRISTOPHER ROLLESTON.

Treatment of neglected cases of club foot ('*Brit. Med. Journ.*,' 1921, II, p. 1109).—**W. P. Noall** points out that in old and neglected cases tenotomies alone are useless. The bones have grown abnormally, and therefore excision through the medio-tarsal joint is advised. *Talipes equino varus*:—Bleeding is prevented by the application of a tourniquet to the thigh. The tense bands of plantar fascia are divided subcutaneously. The inferior and internal portions of the astragalo-scaphoid and the long and short plantar ligaments are then divided. The foot is unrolled and stretched manually as much as possible. A curved incision is then made from below, and in front of the internal malleolus downwards and outwards over the dorsum of the foot towards its outer border. The various tendons are then exposed, the nerve to the extensor brevis digitorum is preserved, and the muscle itself is detached from the head of the os calcis and turned outwards. The astragalo-scaphoid joint is then opened. The periosteum and ligamentous capsule are then separated by a rugine from the neck of the astragalus. The head and part of the neck of the astragalus are then removed, and a thin layer is taken off the adjacent surface of the scaphoid. The calcaneo-cuboid joint is then opened dorsally and adjacent portions of these bones removed. The varus should now be completely corrected. The medio-tarsal joint is closed dorsally with strong chronic catgut sutures. In cases of overaction of the tibialis anticus its insertion may be detached and sutured to the periosteum so that it becomes an inverter of the foot. The extensor brevis digitorum is now resutured to the upper surface of the os calcis. The anterior annular ligament is then united over the extensor tendons and the skin wound sutured. The tendo Achillis is then lengthened by the usual Z-shaped incision. The posterior ligament of the ankle-joint is then divided so that the foot can be dorsiflexed beyond a right angle. The two ends of the tendo Achillis are sutured and the wound closed. Wool

and bandage is applied from the knee to the base of the toes. Plaster-of-Paris bandages are then applied, and before setting the casing is slit up anteriorly and covered by a cotton-wool bandage. At the end of six weeks the plaster is removed and massage is started. Internal and external leg irons are provided. A stop is inserted at the ankle to limit plantar flexion, and a varus T strap to counteract any tendency to a return to the varus position. A cork sole is also added to counteract any shortening. If there is any inward rotation of the lower part of the leg, the leg iron should be continued up to the pelvis and fitted there to a band. *Talipes calcaneo-cavus*:—Stage 1: Through an incision on the inner and outer border of the foot through the summit of the cavus deformity a wedge-shaped piece of bone is removed. The foot is bandaged to the tibia by plaster, which is removed in five weeks. Stage 2: The anterior ligament of the ankle-joint is divided through an incision across the front of the joint. Through an incision over the tendo Achillis the tendon is divided and a wedge-shape piece of bone removed from the back of the astragalus, the base backwards. This allows for dorsi- and plantar flexion. Dressing and after-treatment proceed in the same way as for *talipes equino-varus*. The shortening of the affected limb gradually disappears. Personal supervision by the operator and skilled massage are necessary for some years.

CHRISTOPHER ROLLESTON.

Congenital dislocation of the head of the radius (*Il Policlinico*, 1922, xxix, *Sec. Prat.*, p. 8).—**Kraus**, who records a case in a girl, aged 10 years, states that congenital dislocation of the head of the radius is fairly common, being considered by Blodgett (1906) as the third most frequent of all congenital dislocations. Andreini in 1914 collected 116 cases, which, in conjunction with the present case and one previously reported by Kraus, make a total of 118 cases, which may be grouped as follows: bilateral dislocation in 68 cases, or 57·62 per cent., and unilateral dislocation in 50 cases, or 42·38 per cent. Backward dislocation occurred in 65, forward dislocation in 37 and outward in 11. In 5 cases there was subluxation only: 75 per cent. of the cases occurred in the male sex. Kraus, however, points out that a limitation of movement in a male subject is much more likely to attract the parents' attention owing to the possibility of his value as a workman being affected than in a girl, especially when the deformity is not severe, so that probably a good number of cases escape notice.

J. D. ROLLESTON.

Ischæmic contracture of forearm (*Glasg. Med. Journ.*, 1920, II, p. 215).—**A. Young** reports a case in a boy aged 11 years. The condition occurred after fracture of both bones of the left forearm slightly above the middle. A detailed account is given of the treatment by manipulation and splinting. Over two years after the injury recovery was not quite complete.

J. ALLAN.

Arthroplasty of the knee-joint (*Dub. Journ. Med. Science*, 4th series, 1920, p. 402).—**W. I. de C. Wheeler**, at a meeting of the Royal Academy of Medicine in Ireland, Section of Surgery, showed a case with radiograms taken before and after operation. The patient, a little girl, had osteomyelitis six years ago, resulting in a double ankylosis, the left knee being flexed and the right extended. Using lateral incisions he had re-

modelled the femoral and tibial condyles and had interposed lateral flaps of the soft tissues. The articulating surfaces should be as wide as possible to anticipate lateral instability. The result was excellent. J. ALLAN.

Sclerosing non-suppurative osteomyelitis (*Journ. Amer. Med. Assoc.*, 1921, LXXVII, p. 986).—**S. Fosdick Jones** states that this condition was first fully described by Garrè in 1891, although an isolated case had been reported by Klippel in 1879. In the great majority of cases the onset is acute, accompanied by a high fever, swelling of the affected limb, pain at the site of the bone lesion, and considerable infiltration of the soft parts, but the skin over the affected bone is not reddened and there is no formation of pus. As the temperature subsides the swelling of the soft parts disappears and only the permanent enlargement of the bone remains. The condition must be distinguished from sarcoma of the bone, bone syphilis and solid osteitis fibrosa. Although osteocopic pains are common to both diseases, the absence of other syphilitic manifestations, the gradual subsidence of the pain and the negative Wassermann reaction in the blood and cerebro-spinal fluid should distinguish Garrè's disease from bone syphilis. Malignant disease can be excluded by the initial rise of temperature, absence of glandular enlargement, the infiltration of the soft parts, and the absence of cachexia and rapid loss of weight. Careful X-ray examination should be made in each case. In osteitis fibrosa, with or without formation of cysts, spontaneous fracture is the predominant symptom, the temperature is normal, and swelling and pain are not symptoms of which the patient complains. In doubtful cases of bone disease a frozen section should be examined at the time of operation, in order to determine the exact pathological process and to prevent unnecessary amputation.

J. D. ROLLESTON.

Osteomyelitis of the upper jaw in infants (*Rev. de Lar., d'Otol. et de Rhinol.*, 1921, XLII, p. 463).—**Vernieuwe** states that acute osteomyelitis is found in the following order of frequency in different parts of the body: tibia, femur, humerus, flat bones of the skull, lower jaw, terminal phalanges of the fingers, clavicle, ulna, radius, fibula, scapula, upper jaw, pelvis, sternum and ribs. The much greater frequency with which the lower jaw is involved compared with the upper jaw is due to its relatively poor blood supply. The upper jaw is supplied by all the branches of the internal maxillary artery with its numerous anastomoses, whereas the lower jaw is supplied by only two small arteries which have no anastomoses. Acute osteomyelitis of the upper jaw is comparatively uncommon, especially if that due to phosphorus poisoning or acute exanthemata, particularly scarlet fever, be excluded. Infants are chiefly affected, as out of twenty-seven cases collected by Landwehrmann 60 per cent. occurred during the first month of life. The osteitis may arise from three sources: (1) the buccal cavity and alveoli; (2) the orbit and lacrymal ducts; (3) the nose. Vernieuwe records two cases in infants aged 5 weeks and 2 months respectively simulating maxillary sinusitis.

J. D. ROLLESTON.

Two cases of mediastinal abscess from dorsal Pott's disease (*La Pediatria*, 1920, XXVIII, p. 1048).—**C. Pestalozza** describes fully two cases: (1) a boy, aged 10 years, suffering from dyspnoea and "asthmatic" attacks of inspiratory type (which excluded the diagnosis of primary asthma). Examination of the nasopharynx and larynx was negative. X rays showed a dark shadow between the fourth and sixth dorsal vertebræ and changes in the

spines of the fifth and sixth dorsal vertebræ. In spite of exploratory puncture being negative, a diagnosis of abscess was made rather than that of a large tracheobronchial adenopathy owing to the rotundity of the X ray outline. (2) A girl, aged 3 years, in whom there was marked wasting and enlargement over the spine of the first and second dorsal vertebræ. X rays showed a clearly-defined triangular shadow over the upper part of the sternum. On exploratory puncture a small quantity of amorphous material was withdrawn.

VINCENT DICKINSON.

Wound of the thoracic duct in the removal of tuberculous cervical glands (*Glasg. Med. Journ.*, 1921, I, p. 398).—G. H. Edington reports a case in a boy, aged 7 years. Tuberculous cervical glands in the anterior and posterior triangles of the left side were dissected out from the base of the skull to the root of the neck. The thoracic duct was not seen, and there was nothing unusual in the appearance of the wound at the conclusion of the operation. There was a post-operative rise of temperature to over 100° F., and in thirty-six hours the dressings began to be soaked with watery discharge. On the fourth day the temperature had fallen to normal, but milky fluid welled from the wound. Under chloroform the wound was opened and fluid sponged out. All swelling had ceased, but some bleeding occurred on handling the internal jugular vein, the bleeding spot being ligated with difficulty. On the sixth day the morning temperature was 103°, falling in the evening to 100°, and the boy was much better. On the ninth day there was dyspnoea and lividity, and dullness at the left base. Temperature was 104° and the discharge was less. On the eleventh day the discharge was more profuse, and on the twelfth day there was much bleeding. On the following day the case was seen in consultation with a colleague, and on dressing the wound a large opening in the outer side of the jugular vein was found. The trunk was ligated, and the sterno-mastoid and omo-hyoid were sutured down to the scalenus anticus. Death took place the same night with a copious flow of blood from the wound.

J. ALLAN.

Osteopsathyrosis idiopathica (*La Pediatria*, 1920, xxviii, p. 953).—E. Ruggeri.—This condition was first described by Löbstein under this name in 1835, and subsequently by Vrolich in 1849 under the title of "osteogenesis imperfecta." The author reports the case of a girl, aged 13 years, who suffered from bony fractures in eleven different positions from the age of 19 days to 12 years. The case presented various osseous deformities, bitemporal prominence, kyphoscoliosis and subluxations. Radiograms showed hypoplasia of the diaphyses with trabecular rarefaction. There was a slight blue tinge of the sclerotics and changes in the phospho-calcio-magnesium metabolism. The Wassermann reaction was negative. Red blood-cells 3,920,000, white 5300, hæmoglobin 68 per cent., polymorpho-nuclears 68 per cent., lymphocytes 23 per cent., large mononuclears 6 per cent., eosinophils 1 per cent. After treatment for 2½ months with adrenalin and extract of thymus the patient's condition improved, weight increasing by 4 kgrm., the red corpuscles to 4,800,000, white 6900, hæmoglobin 92 per cent., the leucocytic formula becoming normal.

VINCENT DICKINSON.

Meningitis with putrid cerebro-spinal fluid following slight trauma to the back and operation for adenoids and large tonsils (*Med. J.*

Austral., 1921, II, p. 457).—**W. D. Upjohn**.—The patient was a girl, aged 12 years. Lumbar puncture revealed a foul-smelling purulent fluid containing various cocci. The child died about 18 hours later, and post-mortem examination showed diffuse purulent meningitis, and pus in the ventricular system, and disease of the spleen, liver and kidneys.

F. R. B. ATKINSON.

Thrombo-phlebitis of the cavernous sinus of dental origin (*Paris méd.*, 1921, II, p. 305).—**Lauret**, who records a fatal case in a girl, aged 7½ years, remarks that propagation by the veins to the cranial sinuses and meninges of an ordinary dental infection, though by no means common, is worthy of attention on account of its gravity. Delay in operating and stagnation of pus play an important part in its causation. Early and energetic treatment is required on the first manifestation of a dental infection of this kind.

J. D. ROLLESTON.

Reviews.

MANAGEMENT OF THE SICK INFANT. By **LANGLEY PORTER, B.S., M.D.**, AND **WILLIAM E. CARTER, M.D.** Pp. 654. London: Henry Kimpton, 1922. Price 42s. net.

In a foreword to the volume the authors state that they have been unable to find any text-book in the English language which deals exclusively with the peculiarities of disease as it occurs in infants, and that there appears therefore to be a need for a work of this kind. While there is little real justification for such a plea in view of the existing excellent standard text-books on the diseases of children, the new work is a not unworthy addition to the literature, presenting, moreover, some originality of method and of arrangement of subject-matter. There are three sections, in the first of which are discussed some of the commoner symptoms met with, including vomiting, diarrhoea, constipation, hæmorrhage, pain and tenderness, convulsions, syncope, fever and cough, together with a chapter on nutrition. Part II deals with diseases of the respiratory, digestive, circulatory, lymphatic, nervous and osseous systems, with chapters on skin, genito-urinary and infectious diseases, and one on the internal secretions.

Part III, which is concerned mainly with methods of procedure, is in some ways the most satisfactory section of the book, the directions given being particularly lucid as well as practical, while the fifty-four illustrations add still further to the clarity of the text. The procedures are carefully written out step by step, and the various items of equipment needed in each case enumerated.

Among the measures thus discussed are intravenous, intramuscular, subcutaneous and intraperitoneal injections of various substances, transfusion of blood, lumbar and ventricular puncture, gastric lavage and gavage, bowel and bladder irrigation, catheterisation, irrigation of the ear, paracentesis tympani, nose and eye irrigation. Directions are also given for the manipulative reduction of inguinal and umbilical hernia, as well as for the preparation of various baths and packs, while a useful chapter of formulæ and recipes is added, followed by a chapter on drugs and prescriptions indicated in various conditions. In diphtheria the authors advocate

intravenous or intramuscular injections of antitoxin, of never less than 10,000 units, with the addition in the laryngeal type of the inhalation of fumes from calomel placed on a hot metal plate. A short chapter on poisoning completes a book which, mainly by virtue of the eminently practical character of the concluding section, will be found of great service to the general practitioner.

The volume is well got up, and is supplied with an adequate index.

E. M.

ALIMENTATION ET HYGIÈNE DES ENFANTS. Par J. COMBY. Pp. 440.
Paris: Vigot Frères, 1922. Price 10 fr.

DR. Comby's excellent handbook for mothers, nurses, midwives and students, which is now in its fourth edition, is too well known to need detailed recommendation. In a few prefatory remarks to this new edition the author explains that he has not hesitated to use technical phrases, or to incorporate even into such a rudimentary text-book as this the essential scientific facts on which current medical practice as regards the feeding and hygiene of infants is based, but the teaching has lost thereby none of its former clearness and simplicity. The volume being emphatically a book of reference rather than a treatise, the alphabetical method of arrangement has been adopted as the most practical, an index still further facilitating its use.

While the handbook deals first and foremost, as its title implies, with questions of feeding and of hygiene—the latter term receiving a sufficiently broad interpretation—a number of the commoner ailments and disorders of infancy are also briefly discussed, these including constipation, diarrhoea, vomiting, intestinal worms, convulsions, and so on. Although it is written mainly for the uninstructed, to the practitioner who has not time for much reading Dr. Comby's work should prove of value and interest, while we cordially commend it to the attention of all other classes having the care of infants.

E. M.

DIAGNOSTIK DER KINDERKRANKHEITEN MIT BESONDERER BERÜCKSICHTIGUNG DES SÄUGLINGS. Von Prof. Dr. E. FEER, Direktor der Universitäts-Kinderklinik in Zurich. Zweite Vermehrte und Verbesserte Auflage. Berlin: Julius Springer, 1922. Price in Germany, paper, 114 m., bound 160 m.; in England, paper 17s., bound 20s.

A SECOND edition of Prof. Feer's book on the diagnosis of children's diseases has been published within a year of its original appearance (*vide* BRITISH JOURNAL OF CHILDREN'S DISEASES, 1921, xviii, p. 167). Opportunity has been taken to make a few amplifications of the text, and to add some further photographs to the remarkable collection illustrating almost all phrases of disease in infancy and childhood.

H. C. C.

TUBERCULOSIS IN INFANCY AND CHILDHOOD. By J. CLAXTON GITTINGS, M.D., FRANK CROZER KNOWLES, M.D., and ASTLEY P. C. ASHHURST, M.D. Philadelphia and London: J. B. Lippincott Co., 1922. Pp. 273. Price 21s. net.

THIS book, which is intended for the use of the general practitioner, is based upon a course of lectures which was delivered at the Children's Hospital, Philadelphia, under the auspices of the Philadelphia Pediatric Society. Although it contains nothing outstandingly new there is undoubtedly room for a comprehensive presentation of the diagnosis and

treatment of tuberculosis in early life, and as such the volume will assuredly find its public.

There are ten chapters, the first of which is devoted to general considerations, mainly of an ætiological character; the second to general principles of diagnosis; and the third to tuberculin in diagnosis and to tuberculosis of the cervical nodes. In the next six chapters are discussed the various manifestations of tuberculosis in childhood, and the last chapter is devoted to treatment. On the whole the authors have covered the ground well, and while there is a commendable absence of dogmatism on questions which may still be regarded as *sub judice*, such as that of stability of type, clear indications are given as to the side on which in their opinion the balance of evidence lies. The number of authorities consulted is considerable, more particularly on the experimental side, the book being in most respects thoroughly up to date. We disagree, however, with the statement made in the first chapter to the effect that "unless the mammary gland be actually diseased there is little evidence to show that tubercle bacilli can be transmitted in mother's milk," recent carefully controlled experiments in France having clearly demonstrated this to be a clinical possibility that must be reckoned with.

While the different sections of the book are not all of equal value—the chapter on treatment, for example, being a little weak in some respects—the medical profession generally, and the pædiatrist in particular, owes a debt of gratitude to these three authors for their useful and interesting monograph.

E. M.

LEHRBUCH DER GRENZGEBIETE DER MEDIZIN UND ZAHNHEILKUNDE.
BEARBEITET UND HERAUSGEGEBEN VON DR. JULIUS MISCH. Zwei
Bände, Zweite vermehrte und teilweise neuarbeitete Auflage. Leipzig:
F. C. W. Vogel, 1922. Price for abroad, M. 1200 paper, bound
M. 1425; in Germany, M. 400 paper, bound M. 475.

THIS work on the relation of medicine and dentistry, of which the first edition appeared in April, 1914, consists of two volumes each containing more than 600 pages, and is intended for the use of students, dentists and medical practitioners. It is divided into ten parts, devoted respectively to internal diseases, pædiatrics, neurology, syphilis, dermatology, gynæcology, rhinology and laryngology, otology, ophthalmology and industrial diseases. The present edition has been thoroughly revised, certain parts having been entirely re-written, such as those on stomatitis, anæsthesia, diseases of the blood, kidneys, circulation and stomach, oral hygiene in children, fractures and dislocations of the teeth, etc. Several new subjects have been added, including discoloration of the teeth, injuries to the salivary glands, changes in the teeth due to old age, smallpox, malaria, jaundice, persistence of the milk teeth, third dentition, bulbar paralysis, changes in the teeth due to nerve injuries, impetigo contagiosa, favus, occupational dermatoses of the dentist, etc. The editor, Dr. Julius Misch, a well-known Berlin dentist, who has taken an active part in the preparation of each section, is to be congratulated for having secured such excellent collaborators. In the section on diseases of children, which is mainly the work of Dr. Gustav Tugendreich, the writers, after a brief anatomical and physiological introduction, discuss dentition, the relation of children's diseases to disorders of the teeth and mouth, acute infectious diseases, diseases of the mouth, diseases of the tongue, and malformations such as hare-lip and cleft palate, with an appendix on oral hygiene and anæsthesia in childhood. The other sections, which

contain much that will interest the pædiatrist, are those on nervous diseases by Dr. Kron, skin diseases by Dr. Ledermann, rhinology and laryngology by Dr. Findler, and otology by Dr. Grossmann.

The work is well printed and illustrated, and should prove a valuable work of reference.

J. D. R.

RÔLE DE LA RADIOLOGIE DANS LE PRONOSTIC DES AFFECTIONS CARDIO-VASCULAIRES. Par le Docteur Germaine ANDRÉ SOREL. Avec Préface de M. le Prof. VAQUEZ. Paris: A. Davy. Price 15 frs.

DR. ANDRÉ SOREL has entered into a careful study of cardio-vascular conditions by radiology and has drawn up diagrams and measurements representing the normal states and the changes which occur in the abnormal heart. The work has been of very considerable extent and the results will be of great use to radiologists and to cardiologists. The elucidation by radiology of problems in relation to heart disease, especially in its early stages, has been neglected up to the present. Many conditions which cannot be shown by percussion and auscultation can be seen by screen observations. We welcome, therefore, this work by Dr. Sorel.

The conditions of hypertrophy and dilatation can be distinguished by radiology, and exact diagrams are given to show the means of making such distinction. It is also pointed out that in many cases there is distension only. Continuing in the same way the author shows how radiology gives us information regarding alterations in the shape and size of the heart which can be demonstrated even though they may be confined to one or other of the chambers, and thus demonstrate that radiology is a far more exact method than ordinary examinations by percussion and auscultation.

Much of the work will need confirmation, but it is very valuable work and the ground covered includes practically all conditions. Special attention is paid to aortitis. Some of the conclusions reached are as follows: Cardiac insufficiency occurs in three successive states of the cardiac muscle, distension, hypertrophy and dilatation. The last is the only one that indicates failure of the heart. Each of the cardiac chambers has its own demarcation and these are demonstrable by radiographic methods. Screen examination is the only method by which the diagnosis and prognosis of aortitis can be made with any degree of certainty.

C. P. L.

LE DISPENSAIRE MARIN. Par J. JARRICOT. Pp. 637. Paris: Masson et Cie, 1922. Price 60 fr. net.

In this bulky volume the author presents what he describes as the first of a series of scientific studies on the uses of sea-water in therapeutics and in the prophylaxis of diseases of young infants, and deprecates the organised opposition to this method of treatment among the medical profession generally. There are six chapters, in the first of which are set out the claims of the sea-water dispensary to a high place among puericultural methods, as substantiated by the records of 237 infants cured of digestive troubles by this means. In the second chapter sea-water serum and artificial serum are compared as regards their chemical composition, their thermic and therapeutic effects and their elimination by the kidney, an appendix and bibliography on the biological properties of sea-water being added. The remainder of the volume is taken up by a detailed account of the working of a sea-water dispensary, with the effect of the treatment on the nutrition and growth of infants, and finally of the causes for real and

apparent failure in certain cases. The book is profusely illustrated by charts and by photographs of infants before, during and after treatment, some of the latter, it must be owned, being very impressive. Dr. Jarricot's enthusiasm and his laborious analysis of cases treated should do a good deal towards popularising this method of treatment for infants suffering from various forms of defective or faulty nutrition. E. M.

L'ANNÉE THÉRAPEUTIQUE. Par L. CHEINISSE. Pp. 152. Paris: Masson et Cie, 1922. Price 6 fr. net.

By the issue of this year-book of therapeutic treatment, of which the first number appeared in January, 1921 (*vide* BRITISH JOURNAL OF CHILDREN'S DISEASES, 1921, xviii, p. 223.—ED.), Dr. Cheinisse lays the medical profession under a real debt of gratitude. It is becoming increasingly difficult to keep pace with the new remedies, pharmacological and otherwise, details of which are constantly appearing in the medical press; hence a digest such as is afforded by the present volume is of the greatest possible value to the medical practitioner. The general arrangement of the work is that adopted in the previous number, and for ease of reference it could scarcely be improved upon. The greater part of the book is taken up with a list, arranged alphabetically, of the diseases for which new remedies or methods of treatment have been tried during the past year, with a detailed description of these remedies and references to the publications in which they first appeared. The second part of the book is devoted to the technique of intracardiac, intrathecal, intravenous and subcutaneous injections, insufflations of warm air for diphtheria carriers, and transfusion of blood.

It is noteworthy to what extent intravenous injections of various substances are used, these including quinine hydrochloride in varices, sodium carbonate in migraine and for the prevention of anaphylactic shock, calcium chloride for vomiting in tuberculosis, sodium salicylate in psoriasis and in rheumatism, antipneumococcal serum in pneumonia, extract of corpus luteum in the vomiting of pregnancy, and onabain in cardiac insufficiency. There is an excellent index in which the use of two kinds of type greatly facilitates reference to diseases and to remedies. We have, indeed, nothing but praise for this small volume, which has so rapidly found its public.

The title of the book has been criticised as not being sufficiently explicit, but even if the criticism were justified, there are obvious objections, as Dr. Cheinisse points out, to re-naming a book a year after its first appearance. E. M.

TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY. Thirty-second Session. Edited by OSCAR M. SCHLOSS, M.D. Vol. xxxii.

This volume contains thirty-nine original papers on clinical as well as physiological subjects.

In the first paper, "Segregation of Pneumonia," Thomas S. Southworth urges the importance of isolation of cases of pneumonia and brings forward some evidence of the infectious nature of the malady. Emmett Holt and Helen L. Fales contribute a very important paper on "The Food Requirements of Children" which they apportion as follows: Requirements for basal metabolism, for growth, for muscular activity and for the food values lost in the excreta.

The third paper is one on "The Ulcerated Meatus in the Circumcised Child" by Joseph Brennemann. The next paper, by W. P. Lucas and

B. F. Dearing, is on "Blood Volume in Infants estimated by the Vital Dye Method." They find that in the newborn the quantity of blood is 14·7 per cent. of the body-weight as compared with 8·8 per cent. of the body-weight in the adult, as found by Keith Rowntree and Geraghty by the same method.

Cowie and Parsons contribute a paper on "Studies on Blood Sugar," and Crozer Griffith one on "Acute Cerebro-cerebellar Ataxia."

Isaac A. Abt and I. Harrison Tumper write on "The Significance of Xanthochromia of the Cerebrospinal Fluid," and report a case in a premature (eight months' gestation) infant, in whom the condition was of hæmatogenous origin due to subpial hæmorrhage. A. D. Blackader writes a "Report on an Epidemic of Hæmorrhagic Diarrhœa due to *Streptococcus mucosus*." Henry Heiman contributes "A Study of Pneumonia in Infancy and Childhood during Recent Epidemics." Ramsey and Groebner write on "Further Progress in the Study of the Relative Efficiency of the Different Mercurial Preparations in the Treatment of Congenital Syphilis as Determined by the Quantitative Examination of the Mercury Elimination in the Urine." They find that 50 per cent. mercurial ointment rubbed into the skin twice a week is the most effective form of treatment. Grey powder is least efficient and must be given daily in large doses.

In "A Study of the Incidence of Hereditary Syphilis," P. C. Jeans and J. V. Cooke find that out of 1000 newborn infants of hospital and private patients in St. Louis in which they investigated the Wassermann reaction of the foetal blood and made histological examination of the placenta, 6 per cent. showed the presence of congenital syphilis at the time of birth, but that the incidence varies with the class of patient—from 1·5 per cent. amongst the white middle and upper classes to 16 per cent. amongst the poor negro classes.

E. C. Fleischner and K. F. Meyer report their "Preliminary Observations on the Pathogenicity for Monkeys of the *Bacillus abortus bovinus*."

Rowland G. Freeman records his results from "The Use of Fresh Vaccines in Whooping-Cough," and believes that he has met with some success both prophylactically as well as therapeutically. The same author also reports "A Case of Sarcoma of the Kidney" with metastasis in the lung.

Alfred Hand writes on "Dyspituitarism So-called," and H. J. Gerstenberger discusses "The Factor of the Position of the Diaphragm in Röntgen-ray Diagnosis of Enlarged Thymus." H. M. McClanahan reports "Six Cases of Pyloric Stenosis." Richard M. Smith reports "A Case of Portal Bronchitis in a Child 3 years of age." Godfrey R. Pisek describes "A Case of Cardiospasm" in a child aged 12 years. L. Emmett Holt reports a case of "Primary Sarcoma of the Thymus."

E. C. Fleischner reports a case of "Heart Displacement apparently due to Mediastinal Emphysema following Aspiration Pneumonia." D. M. Cowie writes on "The Duct Sign in Mumps." He finds that a red spot near the opening of Steno's duct is present in ninety-six of all cases of mumps.

The same author also reports "A Case of Priapism resulting from Rapidly Spreading Myxosarcoma." H. J. Gerstenberger gives "A Report of a Case of Anaphylaxis following an Intra-dermal Protein Sensitisation Test." Henry J. Bowditch writes on "Further Development of Infants' Hospitals." Charles Gilmore Kerley writes on "The Effort Syndrome in Children." Clifford G. Grulee writes on "Precipitins for Egg Albumin in Stools." A. Graeme Mitchell and Paul Lewis describe "Some Experiments to Determine the Persistence of Extraneous Bacteria in the Gastro-intestinal Tract of

Guinea-pigs as Influenced by Diet." DeWitt H. Sherman and Harry R. Lohnes write on "Lactic Acid Milk." Langley Porter writes on "The *Rôle* of Certain Anaërobes in the Intestinal Flora of Infants." Maynard Ladd writes on "The Boarded-out Child." Richard M. Smith gives a "Schedule for School Boys." Rood Taylor writes on "The Fate of Subcutaneously Infected Red Blood-cells." He finds that only a small portion of the cells so infected in various blood conditions in young infants in whom the intravenous route was not convenient, reached the circulation although it is followed by a rise in hæmoglobin percentage.

Julius Parker Sedgwick gives "A Preliminary Report of the Study of Breast-feeding in Minneapolis." Charles Hunter Dunn and Samuel A. Cohen write on "Tuberculosis in Infancy." B. K. Rachford writes on "Congenital Under-development of the Right Side in a Three Months Old Infant," as well as on "Malnutrition from Under-feeding." B. Raymond Hoobler writes on "The Misuse of Milk." He believes that excessive use of milk in children over one year old is injurious. J. H. M. Knot writes on "Lesions in the Mid-brain." Lastly, H. J. Gerstenberger contributes an article on "Malt Soup Extract as an Antiscorbutic." W. M. F.

TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY. Vol. xxxiii, 1922.
Pp. 386.

THE full report has now been published of the 33rd annual session of this Society, containing the text of the 39 papers read and discussed at the meeting, as well as of the five papers that were only read by title. The subjects cover a very wide range, including, indeed, most branches of pediatrics, physiological, pathological and clinical, and it is impossible here to do more than refer briefly to a few papers of outstanding interest. Among the various aspects of infant feeding that were discussed were the "Protein Requirements of Children," by Drs. Emmett Holt and Helen Falls; "A Critical Consideration of the Four-hour Nursing and Feeding Interval," by Dr. T. S. Southworth; "The Use of Thick Cereal Mixtures in Difficult Feeding Cases," by Dr. H. Dwight Chapin; "Some Remarks on the Elements of Diet in Infancy," by Drs. Crozer Griffith and A. Graeme Mitchell; and "The Functions of the Organic Factor as Exemplified by Cod-liver Oil," by Dr. P. G. Shipley *et al.*

In a paper on the seasonal variation of rickets Drs. Hess and Unger give the grounds for believing that hygienic factors, especially sunlight, rather than dietetic factors, play the leading *rôle* in the marked seasonal variation of this disorder, excellent results having also been obtained by the use of ultra-violet rays in bringing about calcification of the bones. Dr. Kenley discusses the question of malnutrition in children of the well-to-do, reviewing several case-histories, while Dr. F. Talbot writes on "Severe Infantile Malnutrition, illustrated by a new series of cases in whom the metabolism was obtained under basal conditions. Reports of various cases of exceptional interest are given, these including cases of meningitis due to the *Streptococcus hæmolyticus*, dwarfism associated with congenital heart disease, calcification of the skin in a child, encephalitis lethargica in a newborn infant, acute lymphatic leukæmia with lymphadenomatous changes in an infant of five months, and congenital atresia of the cesophagus.

The volume, which is under the Editorship of Dr. Joseph Brennermann, is instructive and full of interest, as will be seen from the above category, which by no means exhausts the list of noteworthy papers.

E. M.

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